ESTABLISHED IN 1872

PAPER TRADE JOURNAL

With Which Is Combined

Vol. XCVI, No. 20 PAPER Thursday, May 18, 1933

Four Idle Paper Mills to Resume Operations

Great Western Paper Co.'s Plant at Ladysmith, Wis., and Its Pulp Mill at Port Arthur, Ont., to Resume Shortly—Properties Idle Since 1931 Purchased by Peavey Printing & Paper Co.—Marathon Paper Mills Co. Leases Plant at Ashland and Buys Converting Equipment—Mills at Tomahawk and West DePere, Wis., Also to Resume

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., May 15, 1933—Added to the encouraging news from many quarters in the paper industry in Wisconsin are the announcements of the last week indicating that four idle mills will be back in operation within the next thirty days. These are the Great Western Paper Company's mill at Ladysmith, Wis.; its pulp mill at Port Arthur, Ont.; the former pulp mill of the Tomahawk Pulp and Paper Company, known as the King's Dam mill, Tomahawk, Wis.; and the Brown County Paper Company's mill at West DePere, Wis.

Resumption of the Great Western plants, contemplated June 1, results from a three-cornered deal that disposes of properties idle since 1931. The Peavey Printing and Paper Company, Ashland, Wis., operating a converting plant there, has purchased the Great Western Paper Company's mill and water power facilities at Ladysmith, Wis., and its pulp mill at Port Arthur, Ont. The Peavey company has sold its converting equipment at Ashland to the Marathon Paper Mills Company, and has leased its plant in that city to them. The Great Western properties, when sold to the Western Newspaper Union in 1920, brought a price estimated at $3,000,000. The consideration in the current deal was not announced.

Important Expansion of Activities

These changes represent an important expansion of activities for the Peavey Printing and Paper Company, according to William Peavey, president and general manager. The company has built up a large business in the specialty field and found it advantageous to acquire mills to produce its own pulp and paper. Production will be confined to tissues, including napkins, towels, toilet paper and other items sold to a national market. The company will also continue its printing operations in the converting end of the business. The name of Peavey Printing and Paper Company will be retained by the new organization. H. P. Christianson is vice president, and Harold Peavey is sales manager.

Through the leasing of the Peavey plant at Ashland, the Marathon Paper Mills Company, of Rothschild, Wis., will have additional warehouse space for the products of its Ashland converting unit. Some of the Peavey machinery will be kept in operation, according to D. C. Everest, general manager, and those employed by the Peavey plant will be retained by the Marathon company. It is believed that this acquisition of additional storage and converting space will take care of the Marathon company's present expansion needs at the Ashland division. Building operations previously had been contemplated, but were suspended, presumably because of these negotiations.

Immediate resumption of operations is announced for the King's Dam pulp mill of the Tomahawk Pulp and Paper Company, Tomahawk, Wis. Sufficient orders are on hand for at least a month's run with a crew of 25 to 30 men. The mill was leased recently by the Theiler Lumber Company, after being idle for several years, but suspended operations last fall when orders declined.

New buildings to replace fire-ruined structures of the former DePere Paper Manufacturing Company, West DePere, Wis., have been completed. The reorganized company is known as the Brown County Paper Company. All of the machinery has been overhauled and will soon be in good operating condition. Boilers and engines have already been tested. The company plans to start operations about June 1st with a crew of approximately 50 men.

Within the last two weeks, the Hummel & Downing Company, Milwaukee, Wis., carton manufacturers, have added 150 employees, according to J. L. Barchard, president. The crew now numbers 800 men working on a 40-hour week plan. A heavily increased demand prompted the enlarging of the crew.

Bates Valve Litigation

Cessation of operations last November by the Bates Valve Paper Bag Company has culminated in litigation brought by the Hoskin-Morainville Paper Co., Menominee, Mich., running into half million figures.

In its complaint, the latter company alleges that in 1929 it contracted for certain operations to be carried on jointly with the Bates company. The plant was enlarged to accommodate the machinery of the Bates company. It is charged that agreements to buy paper were not carried out and that losses were incurred because of non-payment of rent and failure to complete projected transactions. The amount named in the suit against the Bates company is $546,203.

A writ of attachment was issued last January to prevent the Bates company from removing machinery from the Menominee plant.

Outlook for Paper Brighter In Ontario

Greater Interest Displayed by Consumers In Small Future Commitments—Increased Demand for Various Standard Grades of Paper Anticipated—Fine Paper Steadier, Including Book, Bond, Ledger and Offsets—Coarse Paper Division Continues Quiet

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., May 15, 1933—In common with most departments of trade and commerce in Ontario the pulp and paper industry, both manufacturing and distributing, shows signs of loosening up. No great volume of paper is being sold or manufactured but there are indications that the consuming public are showing an interest in small future commitments and it is believed that this is the prelude to an increasing demand from now on. It is known that a considerable amount of work in the printing and direct mail advertising fields is about ready to be released and some of it is already in the hands of the printers. This has been reflected in slightly increased buying, especially of fine papers and some light weight lines such as tissues, toilets and waxing and grease proof lines.

Coated stock is still moving slowly and there has been no improvement in the paper converting field. Envelope manufacturing firms are complaining of lack of business and there is little doing in the manufactured stationery section. The brighter spots are in fine papers, such as offset, book, bonds and ledgers, although there is no great volume selling in those lines, even, as yet. The coarse paper market is as quiet as it has been for the past several months and kraft, wrapping and paper bag plants are operating lightly.

Manufacturers of manilas, covers and blanks are operating from four to five days a week on an average. There is a general feeling in both manufacturing and wholesale sections of the industry that the paper market is due for some really good business and that it will come during the present spring months. The pulp market has strengthened somewhat and converting mills are using larger supplies than has been the case during the past several months. Most of the mills are stocked up high with ground wood and there is very little call by the paper manufacturers.

Death of Prominent Paper Man

Many in the Canadian paper trade will regret to learn of the death on May 8 of Fred L. Ratcliff, head of the Ratcliff Paper Company, Toronto, one of the city's oldest paper houses. In his sixty-second year, the late Mr. Ratcliff was born in Dundas, Ont., and as a young man he came to Toronto, where he worked as a clerk in Taylor Brothers, Ltd., paper merchants. He rose to a high position in the business world of Canada. At the time of his death he was an executive of many philanthropic institutions and was prominent in church and club circles. He is survived by a widow, one sister, and two brothers.

Straw Paper Plant Assured

Possibility that the proposed straw paper plant at Edmonton, Alberta, may be the first of a group of such plants throughout the agricultural centres of Canada was announced recently by promoters of the project. The initial plant in the Alberta capital is backed by both municipal and provincial officials and will be definitely established in the immediate future at a cost of $50,000 to use wheat and flax straws. The plant is favored by the provincial authorities owing to its ability to capitalize on what is now a waste product in agricultural regions. Strength is given the paper made from wheat straw by the addition of flax straw pulp. The two straws are cooked separately after being treated with a caustic, and after being reduced to pulp are run through the paper machine.

Paper Company Moves Head Offices

Head offices of Miller Bros. paper mill, which have been located in Montreal for many years, are now in operation in Glen Miller, Ont. The change has entailed some alterations to the present Glen Miller branch offices. R. F. Hewton, president, who is a nephew of the late Peter Miller, and executor of the estate of Miller Bros., and who has been in charge of the head office in Montreal, will take up his residence in Glen Miller soon. Houses for Glen Miller officials are now being prepared.

Notes and Jottings of the Trade

Until the news print situation in the east becomes more settled there will be no price concessions on the Pacific Coast, according to executives of British Columbia mills, one of whom said: "The situation in the east is so confused that we are marking time until we get definite news. Our basic price on the coast remains $45 a ton." Coast mills are now operating at about 65 to 75 per cent capacity and average twenty to twenty-one days a month operation. Powell River production has increased slightly since last fall.

The May meeting of the Toronto Club of Printing House Craftsmen was devoted to a gathering at the Don Valley Paper mills as the guests of the company. Supper was served followed by an inspection of the mills and an address by T. Linsey Crossley, paper technologist, on "Principles and Practices in Papermaking of Interest to Printing House Craftsmen," which was illustrated with lantern slides. There was a large attendance.

Reports have been in circulation to the effect that considerable expenditures are in contemplation at the mill of the Abitibi Power and Paper Company at Sault Ste. Marie. Enquiry at the company's offices in Toronto elicited the fact that the plant had been looked over as is usual at this time of year, with the object of ascertaining what repairs are necessary. Such repair work as is required is now in progress, but it is not on a large scale.

Quite a major repair operation took place recently at the Trenton plant of the Hinde & Dauch Paper Company of Canada. Some trouble arose with the No. 2 boiler at the mill and it was found necessary to rebuild it from the ground up.

Walker Paper Products Ltd., has been incorporated under a provincial charter with headquarters at Montreal. The company is empowered to buy, sell, and deal in paper and paper products of all kinds.

Charles W. Dorr Dead

BOSTON, Mass., May 15, 1933—Charles W. Dorr, for nearly 43 years bookkeeper for the Spaulding & Tewksbury Company, Died May 8, at his residence, 41 Sargent street, Winthrop Center, Mass., shortly after a shock, following a period of very poor health. Mr. Dorr was an exceedingly trustworthy man and his loss is a serious one. He entered the employ of the company, September, 1890. He was in his 62d year. The burial was at Norwell, Mass.

Chicago Paper Market Shows Stronger Trend

Group Meetings of Various Sections of Paper Industry Create More Orderly Trading — Fine Paper Activities Broaden, With Price Situation More Favorable—Kraft Wrapping Paper In Better Request—Paper Board Industry Continues Active

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., May 15, 1933.—The Chicago paper market strengthened perceptibly during the past seven days and added materially to its stability. Many group meetings have been held in this vicinity to create an orderly market and these efforts, plus the general improvement in business, have had a great deal to do with more favorable conditions. Paper executives are now willing, in many instances, to advance the belief that the market is ready for a steady pull upward from this level. As yet the enhancement in commodity values has not yet materially affected the market, although an international inflation is bound to have something to do with prices eventually.

The city of Chicago is much enthused over the opening of A Century of Progress Exposition on May 27 and the paper industry is rapidly getting more pepped up about its own exhibit, which is well nigh completed. Chicago retail business has materially improved and a rather noteworthy direct mail campaign has been engineered to popularize the Fair itself. This has led to improved buying of paper and played its part in the general improvement. Krafts have continued their steady pace and are reported in improved demand over last week. Fine papers have broadened out in activity with their underlying price structure more stable. Books and covers report more activity. A slight increase in demand is reported by ground woods and news print also reports a belated stimulus. Paper board markets are feeling the effects of the improvement and prices reflect the greater activity among the mills themselves. Waste papers have also showed a tendency toward betterment.

Sales Tax Declared Illegal

Paper merchants in Illinois, sorely perplexed over the operations and manipulations of the state sales tax of three per cent, stopped their worrying on May 10, when the Illinois Supreme Court declared the law unconstitutional because of non-uniformity. Gasoline and farm products had been exempted from the sales tax under the act and this led to the ultimate decision that it was illegal. The seven judges of the Supreme Court concurred unanimously in the decision.

The matter would be simple, indeed, if those who were collecting the tax merely decided to cease collecting it at the date the decision was handed down. However, paper merchants and others have been collecting the tax under the restraining injunction and are now called upon to return those monies whenever and wherever buyers present authentic sales slips or invoices of payment.

The State at large, however, seems agreed at this date to begin refunds immediately, to credit all charge accounts properly and to withhold the remainder of the sales tax monies collected for a period of sixty days. At the end of that period the money which has not yet been claimed for refund purposes is to be turned over to local emergency relief organizations—as was the original intent of the bill. What will come next is uncertain.

There are rumors that another bill will be drawn up which will overcome the non-uniformity objections. Something will have to be done to provide relief funds and the Chicago paper market, along with all other business, is wondering what will be next. At any rate the Illinois State Sales Tax is no more—at least for the time being.

Pioneer Paper Organizations

An article, "Prologue of the Pioneers", written by Forrest Crissey and appearing in *Chicago Commerce*, lists the history of a number of paper concerns in Chicago. Included in the Chicago concerns in business during 1872 or prior to that date are three or four paper firms and a number of printers of national reputation, well known to the paper industry. The J. W. Butler Paper Corporation was in business in 1844, ninety years ago. Bradner Smith & Co. were in business in 1852 and can well be classed as pioneers. The Messinger Paper Company is listed among the firms doing business in 1865, while the Hanchett Paper Company is named with those beginning operations in 1871. Mr. Crissey lists Bradner Smith as the only one of the four having a direct and unbroken line of descent from the pioneer Chicago institutions of the pre-fire days.

News of the Industry

While details have not been publicly announced, the Writing Paper Manufacturers Association is reported to have held a highly successful conference at the Drake Hotel on May 3. A considerable group of out of town sales executives was in attendance at the all day session, which was under the direction of Emmett Naylor, secretary of the association. Topics of extreme interest to manufacturers and sales agencies of sulphite bond, rag papers and cover papers were extensively discussed.

The Lincoln Paper Company has moved to suite 1043, 608 South Dearborn street, Chicago. The company, paper brokers, formerly was located in Room 1030 but was forced to move into larger quarters because of a marked increase in business. The move was made on May 1 and gave the company double its former office space. Harry B. Todd, vice-president of the concern, is in charge of the organization, which features lines of book papers and specialties.

Announcement has been made of the success of the Pioneer Paper Stock Company in securing a contract to take away waste paper from the Century of Progress grounds all during the ten months Fair. The Chicago concern, according to A. U. Claghorn, vice-president, hopes to make a profitable business out of the litter left by visitors to the Century of Progress. The company will have a fleet of trucks in operation each day between midnight and 8 a.m., gathering up the waste paper. It will be taken to the company's plant where it will be put over sorting belts which divide it into 36 types of waste. The Pioneer organization will be looking, for the most part, for old magazines and high class catalogs but even cigarette packages will be thrown into the grist. Among the destinations of the sorted paper will be magazine paper mills at Kalamazoo, writing paper mills in Wisconsin and box board plants in various centers. Pioneer has purchased two new tractors and five semi-trailers for use in the exposition service and during the period of the Century of Progress expects to give work to from 150 to 200 extra employees.

Boston Paper Market Conditions Improving

Following Unusually Active April, Orders Are Being Received for Various Standard Grades of Paper In Even Better Volume—Bonds, Ledgers and Book Papers In Good Request—Coated Book Paper Quotations Firmer—Kraft Wrapping Paper Moving Freely

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., May 15, 1933—Considerable improvement developed, as a whole, in the paper market during the last week. With April, according to some mill representatives, the best month for a year, orders continued to be received in increasing volume the first half of the current month. There was much more inclination for purchasers to buy. Bonds and ledgers were in good demand and book papers came in for their share. Prices of coated book papers have advanced, but uncoated book papers are generally the same. Prices of blotting paper have risen. Orders for wrapping paper increased slightly in volume. No. 2 kraft is still unsettled in value, prices being made on specifications. Box board continued in fair demand, with prices at the same levels.

There is an active market in practically all grades of paper stock, together with much optimism, and dealers look for an appreciation in values before long. Several grades of bagging were marked up, including the following: Foreign manila rope, 1.60, against a former price of 1.40; domestic manila rope, 1.75, against 1.60; transmission rope, 1.20, against .90; No. 1 foreign gunny, 1.20 against 1.00; scrap burlap, .60 @ .70, against .50 @ .62½; No. 1 scrap burlap, .70 @ .75, against .60 @ .70; scrap sisal, .80 @ 1.00, against .80; heavy wool tares, .75 @ .85, against .65 @ .75, and heavy baling bagging; .90 @ 1.25, against .90 @ 1.10.

New Products Exhibition

At the Second New Products Exhibition of New England Industries, held under the auspices of the New England Council at the Hotel Statler May 11 and 12, a number of concerns in paper and allied business showed exhibits.

The American Writing Paper Company, Inc., Holyoke, Mass., showed 45 samples of paper in the special display case, besides Herculean Cover and various bonds and typewriter paper, listing the Boston firms handling these papers —The Arnold-Roberts Company; John Carter & Co., Inc.; Carter, Rice & Co., Corp., and Knight, Allen & Clark, Inc. Bird & Son, Inc., East Walpole, Mass., showed building board and plant boxes. The Carter's Ink Company, Cambridge, Mass., showed Carter's Carbon Paper. Forbes Lithograph Manufacturing Company, Chelsea, Mass., showed the Forbes color correction system and printed cellulose in rolls and sheets. The Mason Box Company, Attleboro Falls, Mass., in its Fine Arts Division, showed book and catalog covers and paper boxes decorated with superfinish products. The company displayed Mason's Parcel Post Box and Mason's Modern Mailer. The Nashua Package Sealing Company, Nashua, N. H., showed gummed tape and gummed sealing machines. The Northern Envelope Company, Boston, Mass., showed the Duo-Serve Envelopes. These envelopes provide for mailing both first class and second class mail in the same package. The envelope containing the first class mail is removable and so arranged that the postage stamp may be placed on both classes of mail. The firm displayed the Return-Velop, a business reply envelope, and the "Automatic" Post Card Folder. The F. S. Webster Company, Cambridge, Mass., showed Micrometric Carbon Paper, which carries a scale for a number of uses, including that of denoting the approach to the bottom of the sheet.

News of the Trade

In the "all-Strathmore" display of papers made by the Strathmore Paper Company, Mittineague, Mass., in windows of Carter, Rice & Co., Corp., weddings are featured in the central window, while papers for commercial and personal correspondence occupy another window and brochures and folders for advertising purposes are in a third.

Carter, Rice & Co., Corp., is distributing Cover Book Matches, made by the American Writing Paper Company. The covers of the books are made in the fifteen assorted colors of Herculean Cover and the gold match board inside is a specialty developed by the manufacturers.

Mr. Whitmore, general sales manager for the Robert Gair Company, has removed from the New York office to the Haverhill, Mass., office. Charles Morrison continues in charge of New England sales.

Harrie E. Waite, of John Carter & Co., Inc., who underwent a successful operation for the removal of cataracts from one eye, is expected to be back at his desk again in about three weeks.

T. C. Greene, of the T. C. Greene Paper Company, 10 High street, has just returned from a ten days tour of Virginia, including the Shenandoah Valley, Blue Ridge Mountains and Hot Springs. He was accompanied by Mrs. Greene.

Many purchasing agents in the paper trade here are planning to attend the convention of the National Association of Purchasing Agents at the Statler Hotel, June 12, 13, 14 and 15. An Inform-A-Show is to be given.

The last meeting of the New England Paper Merchants Association for the season is to be held at the Hotel Touraine, Thursday evening. Chester Spaulding, secretary of the National Paper Trade Association of the United States, is expected to be present.

Duriron Co. Announces Durichlor

The Duriron Company, Inc., Dayton, Ohio, is announcing the development of a new metal alloy that is almost entirely resistant to hydrochloric acid at all concentrations and all temperatures up to the boiling point. Hydrochloric acid, widely used commercially, is one of the most vicious acids for attacking metals. Heretofore, the only metals available for complete resistance have been very costly.

Durichlor (Dur-i-chlor), the name of the new alloy, is comparatively inexpensive and is being used to make pumps, valves, pipe, fittings, jets and other pieces of chemical handling equipment.

W. H. Scott, general sales manager, stated that the development of the new alloy is one of the most outstanding contributions to the chemical industry in recent years. Announcement of the new product is being made in trade papers, and as the application for it is quite extensive, Mr. Scott said that it probably will result in greatly increased business for the company, which has become known to the Chemical Industry as "Corrosion Headquarters."

Philadelphia Paper Market Registers Gain

Continues Increase Reported In Volume of Sales of Various Standard Grades of Fine Paper—Withdrawal of Mill Quotations on Kraft Wrapping Paper Indicates Advanced Prices In Near Future—Lower Grades of Waste Paper Firmer Than of Late

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., May 15, 1933.—While there is a near unanimity in trade circles in their widest extent—fine papers, coarse papers and allied lines of twines, etc., and in paper stock—that May thus far has shown a distinct gain over April and has quite recovered the setback encountered at that time, there was complete unanimity on the timeliness and the forcefulness of the editorial in the PAPER TRADE JOURNAL of May 11, dealing with intra-industry co-operation.

In Philadelphia, perhaps, beyond any other city in the United States, the movement is outstanding towards securing primarily for the interests of the jobbers, but in the larger sense as well for their customers, benefits resulting from the elimination of unfair cut-throat competition and their restrictions believed to have been imposed by anti-trust laws—which on the authority of the President of the United States never were intended to hamper honest trade protective practices. Indeed, so far as the knowledge of the Typothetae of Philadelphia, which, through the instrumentality of the Paper Trade Association, is asking the Government to study conditions here goes, this city enjoys the unique distinction of being the leader in this movement to have sanction of the Federal government given to the maintenance of fair trade practices and the elimination of cut-throat competition.

Adherence to Trade Customs Advocated

Moreover, on his visit here last week, during which he spoke before the meeting of the Philadelphia Paper Trade Association, Mr. Spaulding casually advised those with whom he chatted, that he is not aware of any other city as active as Philadelphia now is in endeavoring to secure governmental sanction for the vigorous adherence to established trade customs. It will be recalled that in recent weeks, attention has been directed to this matter in these columns; the climax being the presentation of a formal letter by President William A. Hentz, of the Paper Trade Association of Philadelphia, on its behalf to Acting-Director McCorkle of the Trade Practice Conferences in Washington and his request for further information, which has been duly forwarded to him. It is hoped that hearings may shortly be held in this city to bring out those things for which the paper distributors on behalf of the printers are striving to obtain. Costs in the printing trade are, of course, well established, having been closely studied by the Typothetae for a matter of decades. They are, of course, based on the Standard rates, as approved by the United Typothetae of America. It would seem that in Philadelphia with upwards of five hundred printers, large and small, all of them, of course, customers of the fine paper houses, many of them its debtors and a large proportion now on the cash basis list, approximately but 10 per cent are operating under the terms of the Standard Cost System.

The upper tendency of prices received its most emphatic demonstration on Saturday of last week by the withdrawal of all mill quotations on kraft. It is believed that when the new prices are announced—sometime this week—the advance will be a fairly substantial one of not less than $5.00 a ton. Representatives and dealers for some weeks have foreseen the certainty of advance and have urged their customers to take advantage of the pending increase in price. This appeal really met with a ready response and the stock of kraft in this city is very well cleaned up. The advance in price, therefore, comes with entire satisfaction to the distributors, since it has justified the position they took with their trade.

Meanwhile, in the paper stock packing trade the recent advance of approximately a dollar a ton on the whole line of common papers, mixed papers and container stock, has been firmly maintained, but most of the packers are of opinion that an increase of an additional dollar will be necessitated, before there will be sufficient stimulus to gather up this class of material. A few who are physically able to hold on to their stock of these cheap packings are doing so but most of the packers are compelled virtually to dispose of this grade as soon as packed.

Some Activity is Shown

Undoubtedly, there is some activity on the part of the mills as they are buying all that is offered even at the advanced price but competition among them is not sufficient yet to induce them to bid against each other, and since nearly all this material is handled through buying agencies, the price offered by the mills is looked upon as being rather firmly controlled. The dealers, however, are confident that with the slightest increase in mill output, higher prices must be offered to attract supplies.

In the fine paper business, prices remain, of course, steady but there is a small but general all-around increase in sales. President William A. Hentz, of the Paper Trade Association, expressed the opinion that thus far May had shown an increase of at least ten per cent over April and that continued gains were in prospect. Secretary Spaulding held close attention of the Paper Trade Association on Wednesday last when he discussed in masterful style the Carton pricing plan and book paper trade customs which the National association is endeavoring to have adopted by distributors everywhere.

News of the Trade

The Philadelphia Paper and Bag Institute has issued a call for a meeting at the Elks Clubhouse next Wednesday evening.

William J. McGarrity, of the Pen Paper and Stock Company, who has been on the sick list for quite some time, has so far recovered that he is able to be at his place of business every day.

David Bach, in charge of the Cellulose Department of the Enterprize Paper and Bag Company, reports heavily increased demand for its new household white bond roll with Cellophane wrapper. New sales representatives are being added throughout the country. Mr. Bach has just returned from a trip to the south during the course of which he visited the Sylvania industrial plant at Fredericksburg, Va.

Leonard J. Fitzgerald, of the Hummel Ross Fibre Corp., Hopewell, Va., formerly in the Lewis Tower Building, 15th and Locust streets, is now located in Room 878 Drexel Building, 5th and Chestnut streets.

Pacific TAPPI Meets at Longview

The spring meeting of the Pacific Section of the Technical Association of the Pulp and Paper Industry was held at the Hotel Monticello, Longview, Wash., on May 5 and 6, 1933. The affair was a joint meeting with the Oregon Section of the American Chemical Society.

Without a doubt, the 1933 spring meeting was the most successful ever to be held on the Pacific Coast, not only in attendance but in the discussions which followed each and every paper presented. The attendance far surpassed the estimated figures since a number of the mills sent representatives to this meeting who had not been represented at previous meetings.

Promptly at 9:30 Friday morning, Chairman R. B. Hansen opened the meeting with a very short address of welcome to the members. He then introduced B. T. Larrabee as a member of the national Executive Committee, who in turn introduced R. S. Hatch, a past president of the national organization. Mr. Hatch represented Mr. Larrabee at the last meeting of the national Executive Committee, so Mr. Hatch conveyed a very interesting message to the members from the national organization. He stressed in particular the cooperation desired between national headquarters and the Pacific Coast section.

Friday Morning Session

The first paper was presented by N. W. Coster, chemist, Puget Sound Pulp and Timber Company, on "Cellulose Viscosity and its use in Mill Control."

C. W. Morden, president, Morden Machines Company, discussed "To Stage Continuous Batch Beating and Automatic Beater Room Operation."

Following each paper about fifteen minutes were devoted to the Question Box which was successful in getting many to enter into the discussion.

Luncheon and Afternoon Session

Promptly at 12:30 a stag luncheon was held in the main dining room of the Monticello Hotel, at which there were 97 men present. A bottle of the new 3.2 beer was served and seemed to be greatly enjoyed after listening to the technical discussions all morning. No addresses were made at the Friday noon luncheon.

The meeting reconvened promptly at 1:45 Friday afternoon and did not break up until 6 o'clock that evening, since members were particularly interested in the paper presented by Mr. Heppenstall and Mr. Hauff. Our Question Box following the presentation of this paper lasted approximately 45 minutes.

The first paper presented in the Friday afternoon session was by Lowell Edwards, chief engineer, Bingham Pump Works who discussed "Problems in Pulp and Paper Mill Hydraulics."

B. W. Sawyer, engineer, Foxboro Company, read a paper on "Instrumentation."

T. E. Heppenstall, research engineer, Long-Bell Lumber Company and H. A. Hauff, chemist, Weyerhaeuser Timber Company, discussed "Moisture Content Measurements."

A. F. Francis, engineer, Chromium Corporation of America, presented a paper "Modernize Paper Mill Equipment with Chromium."

R. D. Sollars, engineer, Associated Oil Company, discussed "Pulp and Paper Mill Lubrication."

Dinner and Dance a Success

Friday evening a dinner dance had been scheduled, but due to the fact that there were 176 people for dinner this was changed to a dinner followed by a dance. An orchestra played continuously from 7:30 in the evening until midnight. So successful was the dinner and dance Friday evening that a number of the members present without their wives called long distance during the evening to request that their wives come down on the train for Saturday. Quite naturally a great many women accepted this invitation.

Saturday Morning Session

Chairman Hansen opened the meeting Saturday morning by introducing to the numbers the officers of the Oregon Section of the American Chemical Society, who met with the section members on Friday. With the exception of Mr. Goodwillie's paper, the three papers presented Saturday morning were by members of the American Chemical Society.

J. E. Goodwillie, engineer, Beloit Iron Works, talked on "Paper and Pulp Machinery Builders' Problems."

C. S. Keevil of Oregon State Agricultural College discussed, "Recent Developments in the Theory of Drying."

Leo Friedman of Oregon State Agricultural College described "Absorption Phenomena."

A. H. Kuns of Oregon State Agricultural College talked on "The Determination of pH."

These papers were followed by another Question Box,

Business Meeting

At the opening of the business meeting R. B. Hansen announced the resignation of R. J. Schadt as vice chairman of the Pacific Section, and requested a report from the nominating committee which he had appointed Friday morning to select a man for Mr. Schadt's position. The nominating committee, consisting of C. W. Morden, M. W. Black, E. G. Thompson recommended to the Section that the position not be filled at this meeting but that it be left open until the fall meeting as it was their opinion that the vice chairman should not be elected without serious consideration since the vice chairman will automatically become chairman next year, and the right type of man must occupy this office when the national organization holds its convention here on the Pacific Coast in 1934. This suggestion met with the approval of the organization and was placed in the form of a motion by Mr. Morden.

National TAPPI Meeting on Coast in 1934

Following the report of the nominating committee, Mr. Hansen read a communication from the national organization stating that the parent body would like to hold their 1934 meeting on the Pacific Coast. Following the reading of this communication, the following motion was passed unanimously and with considerable show of enthusiasm:

"The Pacific Section of the Technical Association most cordially invites its parent organization, the Technical Association of the Pulp and Paper Industry, to hold its fall meeting on the Pacific Coast in 1934."

Following the acceptance of this motion, a new motion was immediately placed on the floor authorizing the Executive Committee of the local section to immediately proceed with the formulation of plans for the national convention in cooperation with national headquarters.

Luncheon Program

A luncheon was held at 1:15. J. B. Woods of the Long-Bell Lumber Company, who had been schedued to address the meeting Friday morning, was present at luncheon and gave the 144 people assembled a 15 minute talk on President Roosevelt's reforestation program as it relates in particular to the Pacific Coast. This short talk was received with much enthusiasm as everyone present

realized the benefit of the President's program to the Pacific Coast.

Saturday afternoon was devoted to visits to the Longview Fibre Company mill, the Pacific Straw Board mill, and the Weyerhaeuser Timber Company's new pulp mill. Those who did not desire to take the mill visits had cards entitling them to play golf at the Longview Country Club. The golf game started with the sun shining and just a slight breeze, but by the time the boys had reached the ninth hole a regular gale was blowing off the Columbia River and it was raining pitchforks.

Final Dinner Program Enthusiastic

To accommodate the crowd at dinner Saturday night, the entire seating arrangement of the dining room was changed as was our intended program of a dinner dance. Dinner was served to 150 people at 7 o'clock Saturday evening and was followed by a dance. During the dinner R. B. Hansen introduced Mr. and Mrs. B. T. Larrabee, Mr. and Mrs. R. S. Hatch, Mr. and Mrs. Wertheimer, Mr. and Mrs. Morden, Dr. C. H. Johnson, F. L. Hooper, Dr. J. P. Mehlig, Mr. and Mrs. A. S. Quinn, and Mr. and Mrs. H. R. Heuer. All of these men are past officers of TAPPI with the exception of the three officers of the Oregon Section of the American Chemical Society. The dinner itself adjourned at about 9:30 and dancing continued until 2:00 a.m.

Machinery Exhibited

One new feature which proved of great interest to the mill men attending the convention was the exhibiting of pulp and paper mill equipment and supplies. This display was set up in a room off the main dining room and included all types of equipment and supplies used in the manufacture of pulp and paper. The room was very attractively decorated with ferns and except for the position of the room, a photo of the display would have been taken. H. T. Peterson of the control department, Weyerhaeuser Timber Company, was in charge of the display and at all times was prepared to answer any and all questions in regard to the operation of the various equipment shown. So enthusiastically was this idea received that we plan to have a larger display at our next meeting providing hotel facilities are available.

H. R. Heuer, Chairman

Everyone complimented Bob Heuer of the Weyerhaeuser Timber Company, general chairman, on the success of the meeting.

Ladies Program

Under the direction of Mrs. B. T. Larrabee, chairman of the Ladies Entertainment Committee, a delightful program was enjoyed by the ladies present. This included an Ocean Beach Highway Tour; visit to the Robert A. Long High School, wherein the students presented an interesting program; Luncheon and Card Party at Longview Country Club; Dinner-Dance at Hotel Monticello and a Theatre Party.

Lake States TAPPI Elects

At the meeting of the Lake States Section of the Technical Association of the Pulp and Paper Industry held at the Rainbow Gardens, Kimberly, Wis., on May 9th, the following officers of the Section were elected for 1933-34.

R. J. Le Roux, of the Interlake Division, Consolidated Water Power and Paper Company, Appleton, Wis., was elected chairman; A. T. Gardner, Combined Locks Paper Company, Combined Locks, Wis., vice chairman and G. H. McGregor, Institute of Paper Chemistry, Appleton, Wis., secretary-treasurer.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry have announced the following elections to membership:

George D. Kratz, consultant on latex, 50 Church Street, New York, is a 1912 graduate chemist of Cornell. Mr. Kratz has formerly been employed by the Diamond Rubber Company, Norwalk Tire and Rubber Company and the Falls Rubber Company.

Edward J. Albert, manager, Thwing Instrument Company, Philadelphia, Pa., has been transferred from associate to active membership.

Lester C. Lewis, physicist, Mead Corporation, Chillicothe, Ohio, is a graduate of the Massachusetts Institute of Technology, received his Master's degree from Union College and his Sc. D. degree from Hamburg University, Germany. Dr. Lewis was formerly research physicist for the American Radio and Research Corporation and the General Electric Company.

C. Maurice Connor, consulting chemist, Glassine Paper Company, W. Conshohocken, Pa., has been transferred from Associate to Active membership.

Einar Morterud, consulting engineer, Oslo, Norway, is an 1888 graduate of Kristiana Tekniske Skole. He was formerly engineer for Bohnsdalens A/B, Superintendent for Bratfos A/B and Hafslund A/B in Norway, and president of Korlga A/B in Sweden. Mr. Morterud developed the well known Morterud System of pulp cooking.

Rosalie M. Cobb, chief chemist, Lowe Paper Company, Ridgefield, N. J. has been transferred from Associate to Active membership.

Frederick C. Stamm, general superintendent of the Upson Company, Lockport, N. Y. attended the University of Wisconsin. He was chief engineer of the Weis Fibre Container Corporation, Monroe, Mich. and assistant engineer of the Nekoosa-Edward Paper Company, Port Edwards, Wis., and the Bryant Paper Company, Kalamazoo.

George W. Wood, manager of the Commonwealth Supplies Company (makers of leatherboard, fiberboard, etc.), Amesbury, Mass., was formerly connected with the General Electric Company, Mansfield Electric Company and C-D Parker Company, Boston.

TAPPI Fall Meeting at Appleton

At the recent meeting of the Executive Committee of the Technical Association of the Pulp and Paper Industry, it was voted to hold the fall meeting at Appleton, Wisconsin, on September 26 to 28.

Otto Kress, technical director of the Institute of Paper Chemistry was selected as general chairman of the convention, which is expected to have the largest attendance in the history of the association's fall meetings.

Headquarters will be at the Conway Hotel, but the Appleton Hotel will house a large proportion of those who will attend.

New Howard Smith Calendar Out

The Howard Smith Paper Mills, Ltd., of 407 McGill street, Montreal, Que., have just issued their annual calendar. The different months are illustrated by twelve beautiful and artistic colored sketches picturing street scenes from twelve Canadian cities, and have been reproduced in facsimile from the originals, which were painted specially for the Howard Smith Paper Mills, Ltd., by the well known artist, Charles W. Simpson.

New York Trade Jottings

R. P. Kernan, vice-president of the Donnacona Paper Company, Ltd., of Donnacona, Que., was a New York visitor early this week.

* * *

Dr. Charles H. Herty, research chemist in charge of the Division of Pulp and Paper Research of the Department of Forestry and Geological Research, at Savannah, Georgia, is spending several days in New York this week.

* * *

The Brown Company, of Portland Maine, announce that their New York offices are now located in the Graybar Building at 420 Lexington Avenue. The new telephone number is Mohawk 4-2355.

* * *

The Kimberly-Clark Corporation, of Kimberly, Wis., has leased space in the Starrett-Lehigh Building, West 26th street and Thirteenth Avenue, New York, for storage and distribution of its products.

* * *

The Paper Trade Association of New York City announces that practically all paper dealers in the metropolitan area will close their offices each Saturday from July 1 to September 2, inclusive.

* * *

Ray Vance, the eminent economist, discussed inflation and deflation at the regular weekly luncheon and meeting of the Eastern Division of the Salesmen's Association of the Paper Industry, held at the Hotel Roosevelt, New York, on Monday last.

Special Train for Green Bay Meeting

Frank J. Timmerman, general chairman of the Convention Committee, has sent a notification to all members of the American Pulp and Paper Mill Superintendents Association that special arrangements have been made for sleeping car service between Chicago and Green Bay for all those who plan to attend the Fourteenth Annual Convention in Green Bay on June 8, 9 and 10.

Private Pullman cars to be used exclusively by members and their friends will leave Chicago at 9:30, Central Standard Time on the night of June 6 for those who will participate in the Golf Jamboree and Clay Pigeon Shooting Contest at Green Bay on June 7. Special Pullman cars will also leave Chicago on the night of June 7 for those who plan to reach Green Bay Thursday morning, June 8, when the Convention will be formally called to order.

All those who wish to take advantage of this service should communicate at once with the Green Bay Convention Committee, P. O. Box 48, Green Bay, Wis., specifying the night of departure from Chicago and whether lower berth, upper berth, section or drawing room is desired. The number in the party should also be stated.

Mr. Timmerman suggests that all those coming to Green Bay should take advantage of the reduced round trip fare to Chicago in force during the Chicago World's Fair. Advantage should also be taken of the special thirty day round trip ticket from Chicago to Shawano, which ticket, covers Green Bay.

The hotel rates at Green Bay will be single room with bath $2.50 to $3.00 double room with bath $4.00 to $5.00.

The convention party will be pretty well divided between the Hotel Northland and the Beaumont Hotel in Green Bay.

International Hydro Report

The report of International Hydro-Electric System and subsidiaries for year ended December 31, 1932, shows consolidated net profit of $2,827,799 after depreciation, interset, federal taxes, minority interest, subsidiary dividends, etc. If applied directly to Class A stock this is equivalent after dividends paid on $3.50 series preferred stock, to $2.72 a share on 858,197 no-par shares of Class A stock. This compares with net profit of $3,217,867, equivalent to $3.20 a share on Class A stock in 1931. All the Class B and common stocks are owned by International Paper and Power Company and International Paper Company.

The Class A stock has preference as to cumulative dividends at rate of $2 per annum and after the combined payments on the Class B and common stocks equal the aggregate amount paid on the Class A stock under the $2 preference dividend, then the Class A stock participates equally with the Class B and common stocks (considered as a class) in any further distributions.

Consolidated income account for year 1932 compares as follows:

	‡ 1932	1931
* Total income	$63,640,767	$57,576,396
Balance after expenses and taxes	36,114,499	32,146,129
Int., sub. divs., min. int., etc.	28,266,928	24,573,027
Depreciation	5,019,772	4,355,235
Net income	$2,827,799	$3,217,867
Preferred dividends	491,756	499,807
Class A dividends	† 413,678	1,695,772
Surplus	$1,922,365	$1,022,288

* Includes other income. † Unpaid cumulative dividends on Class A stock from April 1, 1932, to December 31, 1932, amount to $1,287,295. ‡ Increase in gross revenue and in operating expenses, interest, and other deductions was due primarily to inclusion in 1932 of full year figures on properties acquired in July and December, 1931.

In above statement all figures have been stated at parity of exchange without adjustments of differences between Canadian and United States funds. It is the practice of the company to take into current operations any profit or loss on exchange at time funds are actually transferred.

United Paper Co. 25 Years Old

The United Paper Company, of Richmond, Va., is celebrating its 25 anniversary and as a feature of the celebration on Sunday, April 30 printed in the Richmond *Times-Dispatch* a four-page insert giving a complete history of the business, together with interesting illustrations and many advertisements of the paper products whose lines are prominently featured by the company.

The United Paper Company was founded by Robert F. Sycle, president, and it was successful from the very start. The business has grown until it now occupies a very prominent position in its community, serving Virginia, North Carolina and the District of Columbia. J. L. Buchanan is vice-president and sales manager of the company.

The company enters into its second quarter of a century with the outlook for greater success than ever.

Price Bros. to Continue Operations

Hon. Gordon Scott, recently appointed liquidator of Price Bros. & Co., denies rumors that the news print plant of the company will be closed down.

Operations of Price Bros. & Co. at present comprise mainly the running of the news print mill at Kenogami and a few of the saw mills. News print sales have been on a downward scale for several months past and no immediate improvement is seen for that department.

There have been no important changes in either the company's operations or personnel since the appointment of the liquidator. Sufficient funds have been secured from the banks to carry on the business. Some readjustments may have to be made on future loans, but up to date the company has received all the capital necessary for continuing operations.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Chicago, Ill.—The Chicago Carton Company, 4433 Ogden avenue, manufacturer of paper boxes and containers, closed bids on general contract, May 15, for proposed new plant unit at Crawford avenue and District boulevard, to be two-story and basement, 275 x 500 feet, reported to cost more than $350,000, with equipment. It is planned to begin superstructure at early date. Present plant will be removed to new location and large increases in output arranged. A. Epstein, 2001 West Pershing road, Chicago, is architect and engineer. Company is identified with the United Biscuit Company of America, Inc., 1041 West Harrison street, same city.

Ladysmith, Wis.—Following recent purchase of mill of the Great Western Paper Corporation, Ladysmith, by the Peavey Printing and Paper Company, Ashland, Wis., latter company will make a number of improvements at the plant with equipment replacements, planning to have the mill ready for operation in June, when close to 80 men will be employed at the plant. The purchasing company will operate as a branch mill. It has also acquired the pulp mill of the Great Western company at Port Arthur, Ont., and will place in service in the near future. Both plants have been inactive for a number of months.

New York, N. Y.—The New Deal Carton Company, Inc., recently organized by Samuel Berger, 1165 Evergreen avenue, and Samuel Wach, 1715 Nelson avenue, both Bronx, is said to be planning early operation of local plant for manufacture of paper boxes and containers.

Laurel, Miss.—The Masonite Corporation, Laurel, manufacturer of insulating board products, has adopted a capacity schedule at its mill, giving employment to about 350 men in different departments. The company has also increased operations at its field plants for larger raw material supply. New basis is expected to be continued for an indefinite period.

Menasha, Wis.—The Menasha Mill Supply Company is said to have preliminary plans under way for rebuilding of portion of two-story storage and distributing plant on Appleton street, destroyed by fire, May 4, with loss reported at close to $30,000, including building and stock. The structure is owned by the Aetna Waste Paper Company, 2355 South La Salle street, Chicago, Ill., and occupied under lease. Fred Rosenthal is plant manager.

Brooklyn, N. Y.—The Handy Carton Corporation, care of Joseph B. Boudin, 26 Court street, representative, recently organized with capital of 100 shares of stock, no par value, plans operation of local plant for manufacture of paper boxes and cartons.

Middletown, Ohio—The Fairbanks Fiber Box Company, Yankee road and Baltimore & Ohio Railroad, has approved plans for construction of a new addition to plant, to be one-story, 75 x 130 feet. Superstructure will be placed under way at once. It is estimated to cost over $25,000, with equipment. Hillsmith & Company, 108 East Third street, Dayton, Ohio, are engineers.

New York, N. Y.—The Baxter-Lane Paper Corporation, 90 West Broadway, has filed notice of change of company name to the Baxter Paper Corporation.

Lynn, Mass.—The Frank C. Meyer Company, Inc., manufacturer of cardboard boxes and containers, is running on a capacity schedule, giving employment to about 170 operatives in different departments. Company is holding to similar production basis at branch plant at 259 Lexington avenue, Brooklyn, N. Y. Wages of employes recently have been advanced 5 per cent. Edward Howard is general manager.

Boston, Mass.—M. F. Driscoll Company, 117 A street, paper goods, has leased the entire building at 380 West First street, South Boston, and will occupy for a new storage and distributing plant. Company will remove from present building to new location and expand capacity.

New York, N. Y.—The Kimberly-Clark Corporation, Neenah, Wis., manufacturer of coated and other paper stocks, has leased large space in the Starrett-Lehigh Building, West 26th street and Thirteenth avenue, New York, for metropolitan storage and distributing plant.

Lewistown, Pa.—The Viscose Company of America, Marcus Hook, Pa., has adopted a full time, eight-hour day, at its local cellulose rayon mill, giving employment to close to normal working quota.

Quincy, Ill.—The Robert Gair Company, 155 East 44th street, New York, manufacturer of corrugated and other paper boxes and containers, is discontinuing production at its branch plant at Quincy, and will transfer operations to its Eastern mills, where manufacture will be concentrated in the future.

Whippany, N. J.—The Agar Manufacturing Company, manufacturer of corrugated and other paper containers, boxes, etc., is running on a full-time production schedule at its local mill, with employment of regular working force in different departments. Company has recently advanced wages 7½ per cent at the plant. Orders on hand are said to insure continuance of present operating basis for some time to come.

Lansing, Mich.—The Wolverine Sales Book Company, manufacturer of commercial paper products, is planning early rebuilding of portion of paper converting plant, destroyed by fire, May 6, with loss reported over $50,000, including equipment.

Toronto, Ont.—The Northern Paper Mills, Green Bay, Wis., has concluded arrangements for lease of part of plant of the Hinde & Dauch Paper Company of Canada, Ltd., Hanna avenue, Toronto, totaling about 8000 sq. ft. floor space, and will occupy for new Canadian branch plant. Equipment will be installed at early date for manufacture of tissue and other paper products. Plant

will be operated by the Northern Paper Mills, Ltd., a Canadian subsidiary.

New Companies

New York, N. Y.—The Oakland Paper Mills, Inc., has been chartered with a nominal capital of $5000, to manufacture and deal in paper goods. New company is represented by Hyman Zuckerbrod, 299 Broadway, New York, an attorney.

New Haven, Conn.—The New York Card and Paper Company has been organized with a capital of $50,000, to manufacture and deal in paper and card stocks. Jack Einbinder, New Haven, is the principal incorporator.

Detroit, Mich.—The Lepire Paper and Twine Company has been incorporated with capital of $50,000, to deal in paper stocks of various kinds, wrapping papers, etc. John L. Lepire, 2425 Riopelle street, Detroit, is the principal incorporator.

Brooklyn, N. Y.—The Garco Trading Corporation has been incorporated with a capital of $20,000, to deal in sandpaper and other abrasive paper stocks. Max Miller, 374 South Second street, Brooklyn, is the principal incorporator.

Watertown, Mass.—C. W. Potter, Inc., has been incorporated with a capital of $100,000, to manufacture and deal in paper goods with allied products. G. Eaton Hamilton, 161 Devonshire street, Boston, is treasurer and representative.

New York, N. Y.—Nissen & Kurmeich, Inc., has been incorporated with capital of $10,000, to deal in paper products of various kinds, etc. New company is headed by Charles E. Nissen, 600 West 146th street, New York, and Peter S. Krumeich, 45-38 Fortieth street, Long Island City.

New York, N. Y.—Joseph Yavarkovsky, Inc., has been incorporated with capital of $20,000, by Joseph Yavarkovsky and associates, to deal in paper products of various kinds. Company will be represented by the Albany Service Company, 315 Broadway, New York. Julius Gantman, 401 Broadway, is one of the incorporators.

Brooklyn, N. Y.—The Hano Paper Corporation, 4016 First avenue, has filed notice of change in company capital from $100,000 to $35,000.

W. B. Wheelwright Opens Chicago Office

William Bond Wheelwright has opened an office in Chicago, at 224 East Huron street for mill representation on a commission basis.

He is a member of the Midwestern division of the Salesmen's Association of the Paper Industry and originated the plans for the Paper Exhibit at A Century of Progress sponsored by the Paper Foundation. He was appointed the chairman of the Exhibits Committee.

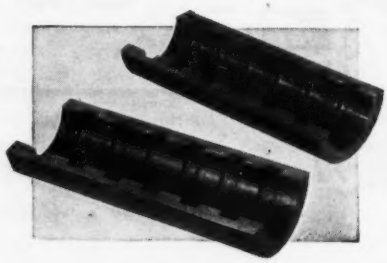
Until the Chicago office of the Geo. W. Wheelwright Paper Company was discontinued, Mr. Wheelwright was their Mid-Western representative. For nine years previously he carried on his own advertising service, handling accounts for Falulah Paper Company, District of Columbia Paper Company, Geo. W. Wheelwright Paper Company, Albany Felt Company and others.

He was a founder of the Paper Makers' Advertising Club and is the only honorary member. Is the author of text books on paper and has been a frequent contributor on the subject in various printing and paper trade periodicals.

Mr. Wheelwright's plan enables mills to get representation in the Mid-West on an economical basis, and considering the importance of this market should be of interest to those who have no local offices.

Gatke Bearings for All Services

Gatke bearings, for a number of years made exclusively for steel mill service, are now available in a complete line for all general machinery uses, according to an announcement of the Gatke Corporation, 228 N. LaSalle street, Chicago, Ill. The requirements of rolling mill service for accuracy and resistance to tremendous pressure, wear, water, acids, heat, etc., have resulted in developments in construction that make Gatke bearings adaptable to all requirements.



Gatke non-metallic bearings are composed of a special textile base impregnated with synthetic resins, moulded under high pressures, and manufactured in all shapes and sizes. They are moulded of three basically different materials for various services, known as Gatke Hydrotex, Gatke Lubritex, and Gatke Grafitex.

Gatke Hydrotex bearings are recommended wherever bearings run in water or where water is available for lubrication.

Gatke Lubritex bearings are designed for equipment that is oil lubricated.

Gatke Grafitex is self-lubricating and especially made for slow moving machinery, where dirt and grit are encountered or where lubrication is neglected.

The Gatke bearings will replace any bearing or bushing. They can be moulded to dimensions with inserts, if required. No machining is necessary. Characteristics do not change with age, and no deterioration occurs if machinery is idle or bearings are neglected for long periods. Accuracy and freedom from wear permit closer gauging of rolls, as in sheet steel and brass mills. They have a low co-efficient of friction and are not affected by ordinary acids, chemicals, solvents, or salt water, or softened by oils or greases.

Hydrotex, Lubritex, and Grafitex bearings are already furnished for journal diameters from ⅛″ to 24″ and can be made to still larger sizes. These materials have an extremely high tensile and sheering strength and a tremendous pressure resistance, although the weight is but one-seventh that of bronze bearings. They are adaptable to all service conditions.

K. V. P. To Show Miniature Paper Mill

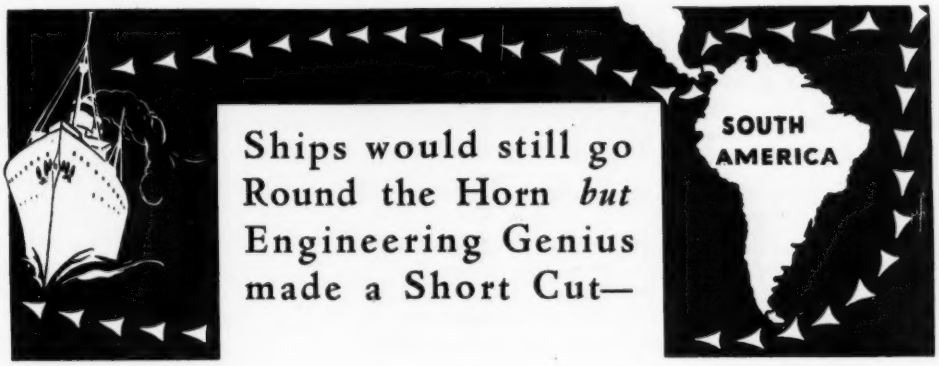
[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., May 15, 1933.—A miniature paper mill is to be shown at A Century of Progress world's fair in Chicago, which opens June 1, by the Kalamazoo Vegetable Parchment Company. This tiny mill will manufacture and print parchment paper in full view of spectators.

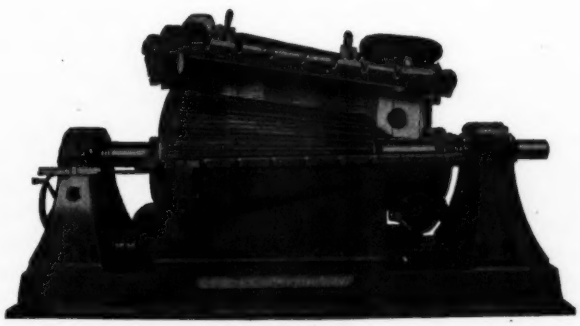
This model mill, a replica of one of the machines in actual operation in the K. V. P. plant here, has just been completed. It is made up in three units and is joined in the form of an ell. The fronts of each unit are so arranged that it can be used as a showcase displaying various products of the Parchment Company. It is a monel metal piece of construction. All screws, bolts and bracings are concealed.

All equipment for the manufacture of paper has been chrome plated.

SHORT CUTS TO REDUCED COSTS - No. 1



Many Jordans are built Today *BUT* The JONES JORDAN Affords the quickest way to *Reduce Costs* . . .



Jones Split Adjustable Shell Type JORDAN, showing top half of shell raised giving view of Bandless Plug.

Take for example the reduction of costs made possible by the split Adjustable Shell. This exclusive feature whereby adjustment is obtained by sliding the shell instead of the plug allows quick accessibility thus *effecting important time, floor-space, labor and money-saving economies.*

The perfect control of plug and shell through precision adjustment to thousandths of an inch and the elimination of all vibration through use of the non-adjustable plug result in a longer life of fillings and more efficient working of stock.

The simple design, sturdy precision-construction and advanced features of the Jones Jordan are real, outstanding engineering achievements that assure a short cut to efficient production at the lowest cost of operation.

Descriptive, illustrated bulletin mailed on request.

Jones

E. D. JONES & SONS COMPANY-PITTSFIELD, MASS.

Builders of High-Grade Machinery for Paper Mills

PAPER TRADE JOURNAL
ESTABLISHED 1872

Published at 34 North Crystal St., East Stroudsburg, Pa. Executive and Editorial Offices, 15 West 47th St., New York, N. Y.

Henry J. Berger
Editor

Ronald G. Macdonald
Editor Technical Section

Herbert J. Larcombe
Associate Ed

Thomas J. Burke, C. A.
Editor Cost Section

Lynne M. Lamm,
Washington Correspondent

Price, Per Copy, 10 Cents — United States, Per Annum, $4.00
Canada, including tax, $7.50: Foreign Countries in Postal Union, $6.00

Member Audit Bureau of Circulations

Vol. XCVI New York, May 18, 1933 No. 20

This publication is now and always has been printed on paper made in the U. S. A.

THE NEWS PRINT SITUATION

News print interests in Canada are said to be in agreement with the joint view of American publishers that present news print prices cannot be accepted as a stable basis for calculation of production costs in the publication industry. The view is that a dramatic change in the situation may come at any moment through the inability of important news print operators to finance further production of news print at a loss. As the annual statements of the various companies have been made public, showing one after the other the change from small net profits to substantial losses on last year's operations, it has become plain to all that the situation cannot continue. What is happening now is that wood piles are being converted into paper to bring what it will fetch in a cut-throat market. When these wood piles are exhausted, cash will be needed for further cutting of wood. It is a foregone conclusion that the banks will not advance the money to continue the ruinous policy of production at a loss. The only alternative then will be the shutting down of mills. This, of course, is supposing that the fight will be fought to a finish. But there is always the possibility that other forces will intervene, bring about a drastic reorganization of the whole industry and place production on a basis which will permit of a reasonable price return for news print. Meanwhile there are many stories going around which if true would indicate that a collapse of the present fantastic conditions is near.

From Vancouver it is announced that news print manufacturers have decided that "until the eastern situation has been cleared up" there will be no changes in the price of news print, and $45 will be the standard on which British Columbia and Washington and Oregon mills will quote.

The general feeling among news print executives on the coast is that, while the first three months have shown reduced business in the domestic market, the outlook is not without its bright spots. A healthy upswing during the later months of the year is anticipated. Foreign business has been fair and in some cases it has been the foundation for improved revenue returns. China has been among the active buyers, although Japan, due to exchange fluctuations and the uncertainty surrounding the recent merger of the three big news print mills, has been backward in placing orders for pulp or paper in this market.

Powell River Company has stepped up production slightly during the past month and is now on a 20-day basis. Production at Powell River and at the Ocean Falls plant of Pacific Mills, Ltd., is said to be at about 70 per cent.

BIG DECREASE IN FOREIGN PAPER TRADE IN FIRST QUARTER OF YEAR

Exports of paper and paper products from the United States during the first quarter of 1933 were valued at $3,256,501, a 23 per cent decrease compared with the corresponding period of 1932, according to the Paper Division of the Department of Commerce. Exports of book paper, not coated, surpassed those of the first quarter of last year by 45 per cent; tissue and crepe paper, by 30 per cent; blotting paper and news print, each by 15 per cent; fiber insulating board or bat, by 8 per cent and wrapping paper by 1 per cent. Exports of paper bags suffered the heaviest loss, amounting to only $26,362 against $134,254 in the same period last year, or a decrease of 80 per cent, while cash register and adding machine paper fared only slightly better with a decline of 75 per cent. Other losses compared with the first quarter of last year were as follows: Overissue and old newspapers and boxboard, each 57 per cent; sheathing and building paper, and papeteries, each 52 per cent; filing folders, index cards and other office forms, 40 per cent; wall paper, envelopes, boxes and cartons, each approximately 36 per cent; paper towels and napkins, 30 per cent; wallboard of paper or pulp, and bristols and bristol board, each approximately 27 per cent; cover paper, greaseproof and waterproof paper, and surface coated papers, each approximately 23 per cent; while vulacanized fiber sheets, strips, rods and tubes, other writing paper, toilet paper and other paperboard suffered losses from 10 to 15 per cent.

March exports of paper and paper products were valued at $1,193,415, an increase of 13 per cent over the preceding month. Substantial increases were registered by book paper, not coated, wrapping paper, bristols and bristol board, other paper board, sheathing and building paper, fiber insulating board or bat, wall board of paper or pulp, blotting paper, filing folders, index cards and other office forms, other writing paper and vulcanized fiber sheets, strips, rods and tubes, compared with February.

Exports of paper base stocks in the first quarter were valued at $745,539, a slight decrease when compared with the same period last year. Pulpwood exports amounted to $50,069, a 35 per cent decrease, while sulphite wood

pulp showed an increase of 10 per cent. Sulphite wood pulp exports were very low, amounting to only $3,860 in the first quarter, or a decrease of 70 per cent compared with the same period last year.

March exports of paper base stocks showed a heavy increase over February, which was shared by all items in this group.

Incoming shipments of paper and paper products in the first quarter of 1933 were valued at $15,458,579, against $24,126,827 in the first quarter of 1932. Standard news print imports amounted to $13,689,557, a decrease of 37 per cent when placed beside the figure for the first quarter of last year. Imports of cigarette paper, books and covers fell short of last year's record during the corresponding period by $336,092. Very heavy decreases were also shown in other wrapping paper, writing and drawing paper, paper and envelope combinations, surface coated papers, uncoated papers, decorated or embossed, tissue and similar paper, pulpboard in rolls, paperboard, pulpboard and cardboard, wall paper, duplex and decalcomania, not printed, paper bags, and papier-mache and pulp manufactures. Imports of Kraft wrapping were high, amounting to $53,040, against $30,726 in last year's first quarter. Heavy increases were also shown in greaseproof and waterproof papers, leatherboard, test and wall board. March imports of paper and paper products amounted to $5,235,529, a 22 per cent increase compared with February. News print imports amounted to $4,533,183, against $3,741,379 in February. Imports of leather board, test and wall board showed an exceptionally heavy increase, amounting to $62,718, against $5,631 in February.

Imports of paper base stocks in the first quarter of the current year were valued at $10,789,467, against $18,103,401 in the corresponding quarter of last year, all items in the group being considerably lower, but the heaviest decreases falling upon pulpwoods, mechanically ground wood pulp, both bleached and unbleached, sulphite pulp, unbleached, soda pulp and rags for paper stock.

March imports of paper base stocks amounted to $2,967,337, against $3,373,811 in February, the decrease being absorbed principally by sulphate pulp, both bleached and unbleached, sulphite pulp, unbleached, and rags for paper stock. Incoming shipments of mechanically ground wood pulp both bleached and unbleached, sulphite pulp, bleached and soda pulp were heavy compared with February.

American Writing to Reduce Capital

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., May 16, 1933—A meeting of the preferred and common stock holders of voting trust certificates of the American Writing Paper Company, Inc., has been called for June 8 to act on a plan to reduce the capital of the Company from $9,278,572 to $6,828,572.

The 90,000 shares of preferred stock it is proposed to carry at $2,250,000 and the 200,000 common stock at $200,000. The amount of the capital reduction will be transferred to capital surplus account.

It is also proposed to write down the fixed assets from their Dec. 31, 1922 book value to $7,421,913 from $11,882,469.

Hope for Removal of U. S. Wood Duty

Hector Authier, member of the Legislative Assembly for Abitibi, who was in Quebec during the week, stated that the forest industry in the Abitibi district was living in hope that the recent conversations between President Roosevelt and Premier Bennett would result in the present duty of $4 per 1000 ft. on wood exported from Canada to the United States being abolished, thus enabling Quebec again to become an important factor in the American market. Owners of saw mills, he said, have been forced to go into liquidation, not because they lack funds, but because they cannot find a market for their output. At the present time, he estimated, there is 135,000,000 feet of wood lying in lumber yards, and most of it has been there for some time, as only 9,000,000 feet was cut last year. But if the present duty levied by the United States on Canadian wood was abolished, there would be an excellent market opened for this industry, according to Mr. Authier. That would apply, moreover, not only to pulp wood but to sawn lumber as well.

Favors Inflation Program

Ossian Anderson, president of the Puget Sound Pulp and Timber Company, Everett, Wash., is a staunch backer of the Roosevelt inflation program. He believes the recent parade of inflationary events relative to the deflationary price of the dollar abroad have had a stimulating effect on the Pacific Northwest pulp industry. Mr. Anderson points out that although prices are not yet up to the "profitable" stage, the demand has been of such volume that the manufacturer does not have to stoop to the bidding of buyers, as was formerly the fashion. That is a progressive step upward, he contends.

The company's pulp plant units are reaching a point in production approaching full capacity. The Everett mill is producing 5,000 tons of pulp a month and the Bellingham unit is turning out 3,000 tons monthly. About 1,000 men are busy in the woods cutting cordwood for pulp and about 500 workmen are employed in the two mills.

Westinghouse Statement Optimistic

Expressing confidence in the leadership of President Roosevelt and the belief that a real business revival is imminent Westinghouse Electric and Manufacturing Company has announced to its stockholders that bookings for March were the largest of any month since July, 1932.

While showing a substantial loss for the first quarter of 1933 attributed to low volume of business the announcement had this to say:

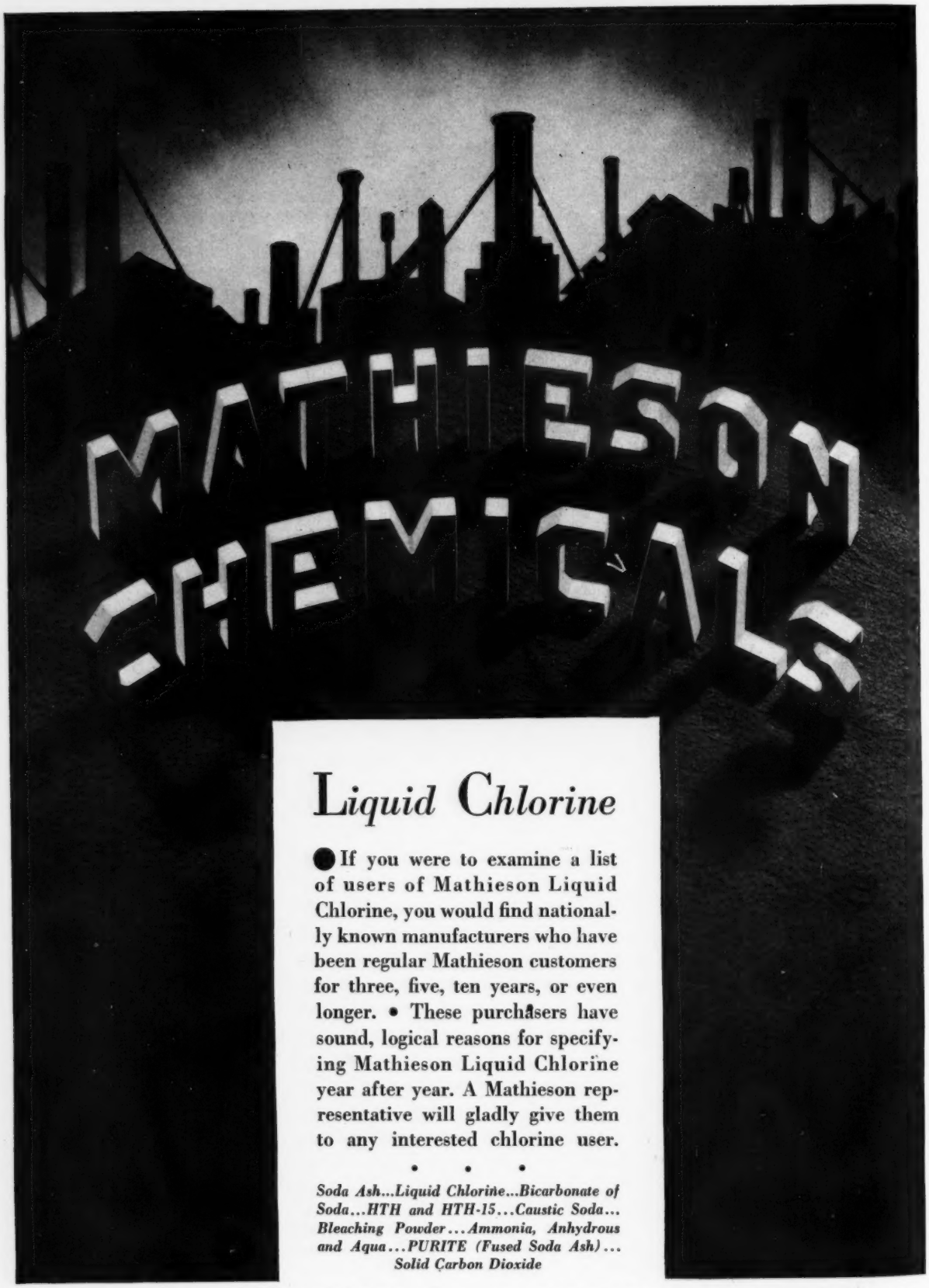
"In spite of the financial situation during the first quarter of this year, March bookings were the largest of any month since July, 1932. While the Company secured its share of available business, yet it was so low that operations for the three months ended March 31, 1933, resulted in a net loss of $3,491,572.

Bids for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 15, 1933—The Government Printing Office has received the following bids for 46,000 sheets of vegetable parchment paper: R. P. Andrews Paper Company, at $44.73; Mathers-Lamm Paper Company, $56.20; Virginia Paper Company, $52.42; Kalamazoo Vegetable Parchment Company, $52.90 f.o.b. mill; and Reese & Reese, Inc., $43.44.

The Printing Office also received bids of 6.05 cents and 6.8 cents for 200,000 pounds of manila tag board and 10,000 pounds of pink tag board from Barton, Duer & Koch Paper Company.



Liquid Chlorine

If you were to examine a list of users of Mathieson Liquid Chlorine, you would find nationally known manufacturers who have been regular Mathieson customers for three, five, ten years, or even longer. • These purchasers have sound, logical reasons for specifying Mathieson Liquid Chlorine year after year. A Mathieson representative will gladly give them to any interested chlorine user.

• • •

Soda Ash...Liquid Chlorine...Bicarbonate of Soda...HTH and HTH-15...Caustic Soda... Bleaching Powder...Ammonia, Anhydrous and Aqua...PURITE (Fused Soda Ash)... Solid Carbon Dioxide

***The* MATHIESON ALKALI WORKS *(Inc.)*, 250 PARK AVENUE, NEW YORK, N. Y.**

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

The National Research Council, 21st and B Street, Washington, D. C., through Dr. Clarence J. West, extends the courtesy of its photostat service to members of the Technical Association of the Pulp and Paper Industry. Owing to a limitation of personnel and time, this service cannot be extended to non-members.

The charge for the photostat service is: 9 x 11 inches—18 cents per page, 18 x 11 inches—35 cents per page, 22 x 18 inches—70 cents per page, minimum charge, 50 cents.

Payment should be made upon receipt of invoice.

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Machinery

Automatic Consistency Control. Sidney E. Meyers. Paper Mill 55, No. 26:4, 6-7 (June 25, 1932).—A discussion of the necessity of automatic consistency regulation and the locations at which such regulation may, or should, be carried out, together with some pertinent and interesting facts regarding the Meyers-Mesco regulator, its construction, application and performance.—A.P.-C.

Prolonging the Life of Fourdrinier Wires. Anon. Paper Industry 14:420, 443, 445 (Sept., 1932).—A brief general analysis of important factors affecting wire life.—A.P.-C.

Chromium-Plated Screen Plates. D. H. Bissell and R. E. Cleveland.. Paper Mill 55, No. 36:4 (Sept. 3, 1932).—A brief discussion of chromium plating screen plates.—A.P.-C.

Stainless Steel and Sulphite. Greswold Van Dyke. Paper Mill 55, No. 24, 4-5; No. 25, 4, 6 (June 11, 18, 1932).—A general discussion and explanation of the corrosion-resisting properties of stainless steels from the standpoint of their composition and structure.—A.P.-C.

The Passivating Effect of Sulphite Liquor on Stainless Steel. H. H. Richmond. Pacific Pulp Paper Ind. 6, No. 7:16-18 (June, 1932).—A brief discussion of the corrosion-resisting properties of stainless steels, from the standpoint of their application in sulphite mills, suggesting investigation of the possible passivating action of sulphite liquor.—A.P.-C.

Rubber in the Paper Industry. Jean Courbier. Industrie Papetiere 11:267-277 (Sept., 1932).—A brief description of the manufacture of rubber articles with a discussion of the uses of rubber in the paper industry.—A.P.-C.

Apparatus for Dewatering and Washing Pulp. Richard T. Lang assignor to American Voith Contact Co. Inc. U. S. pat. 1,876,064 (Sept. 6, 1932).—The apparatus consists of a screw press provided with a screw having a thread which diminishes in a pitch and depth from the inlet to the outlet so as to obtain a gradually increasing pressure on the pulp.—A.P.-C.

Rotary Pulp Screen. Thomas O'Connor. U. S. pat. 1,877,030 (Sept. 13, 1932).—A horizontal, cylindrical rotating screening drum is mounted in a semi-cylindrical vat, on the inner wall of which are mounted a number of upwardly tapered wedge-projections extending longitudinally of the vat, the apex of each wedge lying close to, but not in contact with, the screening surface. The sides of the wedges are not located in planes which are radial with respect to axis of the screening drum. Between the wedges are longitudinal agitating blades extending the full length of the vat and having but a small clearance between the inner wall of the vat and the screening drum; these blades are reciprocated between the wedges The stock is fed through an inlet in the bottom of the vat—A.P.-C.

High Speed Cylinder Mold. A. S. Clark. Paper Mill 55, No. 26:14-15 (June 25, 1932).—A brief explanation of the principle of the Clark high-speed cylinder mold, in which the use of winding wire is eliminated by means of a series of rings securely welded together, together with a discussion of its merits.—A.P.-C.

Enterprise Compensating Drive. Tom Harvey. Paper Mill 55, No. 23:22, 30 (June 4, 1932).—A brief discussion of the merits of the Enterprise compensating drive (which drives the top roll at the same peripheral speed and torque as the bottom roll) and of the troubles which it eliminates in the operation of board machines—A.P.-C.

Paper Drier. Courtlandt B. Griffin assignor to Carew Manufacturing Co. U. S. pat. 1,878,236 (Sept. 20, 1932).—The drier comprises rolls spaced apart from one another to form separate groups, which are spaced from one another. The sheet is carried around the rolls between a pair of felts and passes back and forth from one group to the other. Adjacent runs of the web are not parallel, but form converging passageways through which warm air is directed, entering at one end and being withdrawn at the other.—A.P.-C.

The Effect of Pebble Weight Variation In The Strength Testing of Wood Pulp *

F. C. Peterson[1] and John Kolesinskas[2]

Abstract

A study of the effects produced by weight variations in the pebble charge shows that a longer time is required to reach maximum burst and then is a decrease in tear and freeness when the pebble load is increased.

It is shown that the freeness test may be considered to be a good index of the beating time required to obtain maximum strength.

An investigation of pulp consistency variables in the pebble mill test has been described in detail by Peterson and Makara.[3]

The work reported herewith has therefore been limited to a study of the effects produced by weight variations in the pebble charge.

Procedure

The pulp sample of known weight and moisture content was mechanically disintegrated, using the apparatus described by Moore and Willets.[4]

The pebble mill used was furnished by the Abbe Engineering Company of New York and is listed as Size C. The porcelain balls were supplied by the Coors Manufacturing Company of Golden, Colo. and were of uniform diameter (approximately 1.2-1.3 inches). Their use has been previously described.[5]

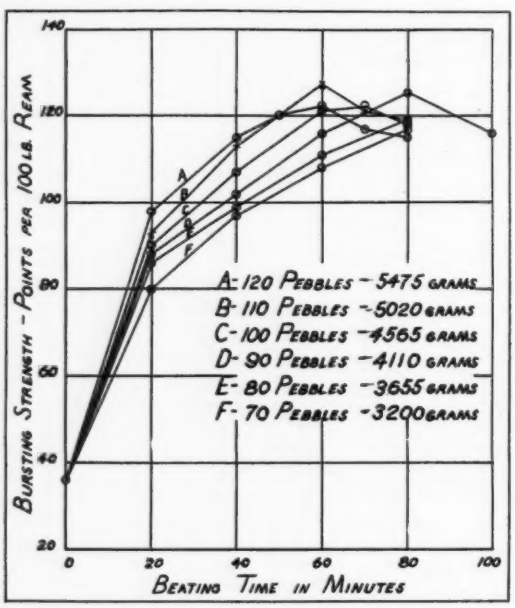

Bursting Strength - Points per 100 lb. Ream
Beating Time in Minutes
A-120 Pebbles - 5475 grams
B-110 Pebbles - 5020 grams
C-100 Pebbles - 4565 grams
D-90 Pebbles - 4110 grams
E-80 Pebbles - 3655 grams
F-70 Pebbles - 3200 grams

FIG. 1.

Effect of Pebble Weight Variation on the Bursting Strength

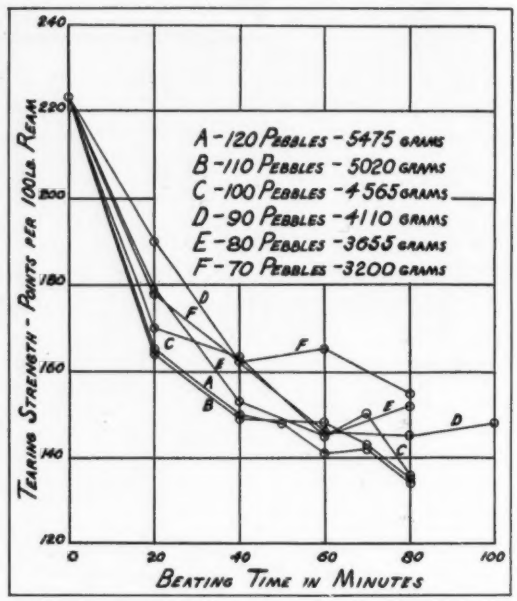

Tearing Strength - Points per 100 lb. Ream
Beating Time in Minutes
A-120 Pebbles - 5475 grams
B-110 Pebbles - 5020 grams
C-100 Pebbles - 4565 grams
D-90 Pebbles - 4110 grams
E-80 Pebbles - 3655 grams
F-70 Pebbles - 3200 grams

FIG. 2.

Effect of Pebble Weight Variation on the Elmdorf Tearing Test.

CHARGING THE MILL.—A pebble mill charge of 90 grain oven-dry. Mitscherlich bleached Sulphite pulp at 4.3 per cent consistency was selected since the greater majority of mills and laboratories arbutrarily have adopted such conditions as standard in their strength testing procedures. A slight variation for mechanically disintegrating the pulp was practiced whereby twice the required amount of water was added to facilitate disintegration. This period of disintegration lasted for 10 minutes after which the surplus water above the required amount was removed with the aid of suction.

The standard weight of balls used consisted of a sufficient number to give a total working charge of 1780 cc. This volume represented a weight of 4110 grams and required 90 to 91 balls. The tests reported consist of those in which the weight of porcelain balls was varied above and below that of the standard run, the difference being equivalent to 10 pebbles or 454 grams (one pound).

ROTATION OF THE MILL.—The mill revolved at 60 r.p.m. as shown by a revolution counter. After each 1200 revolutions (20 minutes), the mill was stopped and the entire charge dumped after which the balls were separated from the pulp. Four separate portions of pulp were beaten for each test for 1200, 2400, 3600 and 4800 r.p.m. respectively.

PREPARATION OF SHEETS.—The pulp charge after being separated from the pebbles was diluted to 20 liters with water at 20 deg. C. Sufficient pulp to give a sheet approximately 65 pounds (25 x 40-500) basis weight was then dipped from the diluted stock. Five sheets were then

---

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., February 13-16, 1933.

[1] Member TAPPI, professor, New York State College of Forestry, Syracuse, N. Y.

[2] Junior member TAPPI, student, N. Y. State Coll. Forestry.

[3] Peterson and Makara, Paper Trade J., *94*, No. 14:35 (1932).

[4] Moore and Willetts, Paper Trade J., *92*, No. 18:45 (1931).

[5] Peterson, Jeffrey and Maughan, Paper Trade J., *93*, No. 16:36 (1931).

prepared using a sheet machine of the type described by Shaw, Bicking and Snyder.[6]

Agitation of the stock prior to dipping was accomplished without mechanical aid. No vacuum was applied to the machine during the drainage period.

The sheets were removed from the machine by couching upon a moist felt. Prior to its use each felt was pressed by hydraulic means for 30 seconds at a pressure of 30 pounds per square inch.

PRESSING.—All pressing was accomplished through the use of hydraulic pressure. After removal from the sheet machine, the felt with its adhering sheet was covered with another moist felt and pressed for 30 seconds at a pressure of 30 pounds per square inch. The sheet was then removed, placed between eight dry, clean blotters previously seasoned at 65 deg. relative humidity at 70 deg. F. and again pressed for five minutes at a pressure of 200 pounds per square inch. The final pressing was carried out by placing the sheet between four dry seasoned blotters following which it was subjected to a pressure of 200 pounds per square inch for two minutes. The sheets for a particular time interval of beating in "book" form, were all pressed at the same time.

DRYING AND WEIGHING.—The sheets were air dried over-night without tension at 65 deg. r.h. at 70 deg. F. After drying they were trimmed to a standard size of 8 x 10 inches and weighed to the nearest 0.1 of a gram.

TESTING.—All testing was carried out at 65 deg. r.h. at 70 deg. F. Five test sheets, previously cut diagonally in half were used for the Mullen test. Four pops along each diagonal and one in the remaining corner of each half sheet were made, thus giving a total of 50 pops for the bursting strength of each interval run. The bursting strength was calculated according to the following formula:

$$\text{Bursting Strength} = \frac{\text{Average 50 pops}}{\text{Average ream weight}} \times 100 = \text{Points per 100 pound ream.}$$

The remaining sheet was used for the Elmendorf tear test. Four strips of standard size were cut from this sheet and a total of ten tear values taken for the Elmendorf test. The tearing strength was calculated according to the following formula:

$$\text{Tear Strength} = \frac{\text{Average 10 tears}}{\text{Ream weight of sheets}} \times 100 = \text{Points per 100 pound ream.}$$

FREENESS TESTING.—Prior to the preparation of sheets, the equivalent of 3 grams bone dry pulp was removed from the diluted stock suspension. The Canadian standard freeness tester was used for all freeness tests and the results recorded in terms of cc. of fast water at 20 deg. C. Two freeness tests were made for each interval run.

[6] Shaw, Bicking and Snyder, Paper Trade Journal, *90*, No. 8:264 (1930).

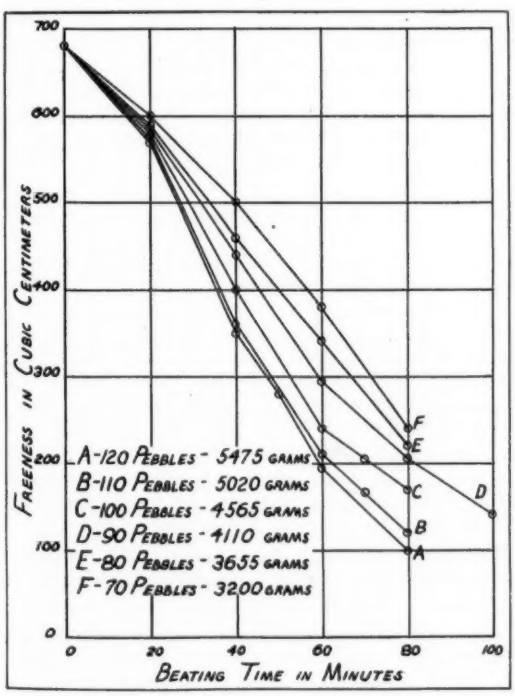


FIG. 3.

Effect of Pebble Weight Variation on Freeness.

Experimental Data

TABLE I

EFFECT OF PEBBLE VARIATION ON PULP CHARGE. 70 PEBBLES (3200 GRAMS) ON 90 GRAMS B.D. PULP AT 4.3 PER CENT CONSISTENCY

Mullen points per 100 pound ream

Minutes beating time	First Run	Second Run	Third Run	Average Run
20	78	82	...	80
40	95	100	...	97
60	110	106	...	108
80	116	118	...	117

Elmendorf points per 100 pound ream

Minutes beating time	First Run	Second Run	Third Run	Average Run	Freeness (fast water)
20	184	172	...	178	600
40	163	161	...	162	500
60	170	160	...	165	380
80	150	160	...	155	240

TABLE II

EFFECT OF PEBBLE VARIATION ON PULP CHARGE. 80 PEBBLES (3655 GRAMS) ON 90 GRAMS B. D. PULP AT 4.3 PER CENT CONSISTENCY.

Mullen points per 100 pound ream

Minutes beating time	First Run	Second Run	Third Run	Average Run
20	88	84	...	86
40	101	97	...	99
60	108	113	...	111
80	121	116	...	119

Elmendorf points per 100 pound ream

Minutes beating time	First Run	Second Run	Third Run	Average Run	Freeness (fast water)
20	174	184	...	179	590
40	160	147	...	153	460
60	140	150	...	145	340
80	150	155	...	152	220

TABLE III

EFFECT OF PEBBLE VARIATION ON PULP CHARGE. 90 PEBBLES (4110 GRAMS) ON 90 GRAMS OVEN-DRY PULP AT 4.3 PER CENT CONSISTENCY.

Mullen points per 100 pound ream

Minutes beating time	First Run	Second Run	Third Run	Average Run
00	36	36	...	36
20	88	86	90	88
40	104	100	102	102
60	116	118	114	116
80	127	125	124	125
100	116	115	116	116

Elmendorf points per 100 pound ream

Minutes beating time	First Run	Second Run	Third Run	Average Run	Freeness (fast water)
00	215	230	...	223	680
20	186	195	191	190	585
40	170	157	161	162	440
60	145	152	140	146	295
80	140	145	149	145	215
100	148	153	144	148	140

TABLE IV

EFFECT OF PEBBLE VARIATION ON PULP CHARGE. 100 PEBBLES (4565 GRAMS) ON 90 GRAMS OVEN-DRY PULP AT 4.3 PER CENT CONSISTENCY.

Mullen points per 100 pound ream

Minutes beating time	First Run	Second Run	Third Run	Average Run
20	88	93	...	90
40	104	110	106	107
60	122	121	119	121
70	124	120	123	122
80	116	120	119	118

Elmendorf points per 100 pound ream

Minutes beating time	First Run	Second Run	Third Run	Average Run	Freeness (fast water)
20	175	165	...	170	580
40	166	170	158	163	400
60	140	144	150	145	240
70	148	155	148	150	205
80	135	133	140	136	170

TABLE V
EFFECT OF PEBBLE VARIATION ON PULP CHARGE. 110 PEBBLES (5020 GRAMS) ON 90 GRAMS OVEN-DRY PULP AT 4.3 PER CENT CONSISTENCY.

Mullen points per 100 pound ream

Minutes beating time	First Run	Second Run	Third Run	Average Run
20	90	96	94	93
40	113	113	...	113
60	127	127	...	127
70	122	119	...	121
80	118	120	...	119

Elmendorf points per 100 pound ream

Minutes beating time	First Run	Second Run	Third Run	Average Run	Freeness (fast water)
20	175	160	158	164	575
40	146	152	...	149	360
60	144	152	...	148	210
70	148	138	...	143	170
80	133	138	...	135	120

TABLE VI
EFFECT OF PEBBLE VARIATION ON PULP CHARGE. 120 PEBBLES (5475 GRAMS) ON 90 GRAMS OVEN-DRY PULP AT 4.3 PER CENT CONSISTENCY.

Mullen points per 100 pound ream

Minutes beating time	First Run	Second Run	Third Run	Average Run
20	100	96	...	98
40	117	113	116	115
50	119	120	...	120
60	120	125	121	122
70	117	115	118	117
80	114	116	...	115

Elmendorf points per 100 pound ream

Minutes beating time	First Run	Second Run	Third Run	Average Run	Freeness (fast water)
20	160	170	...	165	570
40	145	155	150	150	350
50	150	146	...	148	280
60	138	140	145	141	195
70	140	150	137	142	130
80	137	132	...	134	100

TABLE VII
LOSS OF WEIGHT BY PEBBLES DURING A TRIAL RUN OF 16 HOURS.

Weight of Pebbles before run	4565 grams
Weight of Pebbles after run	4553 grams
Loss in weight	12 grams

Results

(1) Increase in the weight and number of porcelain balls charged to the mill results in an increase in the length of time required to produce the peak of the bursting strength curve. The value of the maximum so produced decreases proportionately with increase in pebble weight.

(2) Tearing strength and freeness values tend to decrease with an increase in weight of pebble charge and vice versa.

(3) Experiments seem to indicate a rather remarkable correlation between freeness and maximum Mullen values. Such data indicates that irrespective of the weight of pebbles charged to the mill, the freeness of the treated pulp at the maximum bursting value lies within a range of 5-15 cc. It may be concluded, therefore, that the freeness test may be taken as a fairly good index of the beating time required to produce the peak value of the strength curve.

Penetration in Alkaline Pulping*

By Harold R. Murdock[1]

In the alkaline pulping of wood the importance of penetration does not appear to have been fully appreciated. There is reason for believing that if penetration does not occur early in the pulping process, the cellulose on the outside of the chips stays in contact with a high concentration of chemical for an excessive length of time, so that it becomes overcooked in relation to the cellulose within the chips which has not come in contact with the chemical of high concentration because of lack of penetration.

Evidence appears to indicate that some of the non-cellular material reacts readily with the alkali and is removed, so that if penetration is not allowed to take place promptly, the exposed fibers must be in contact with a solution of higher chemical concentration than that desired. The sulphite pulp industry gives this matter of penetration serious consideration, but for one reason or another the alkaline pulping industry has neglected a consideration of penetration.

In order to throw some light on this subject, The Alkaline Pulping Committee of the Technical Association of the Pulp and Paper Industry asked each of its members to submit to the chairman his views and experience. This initial report contains a collaboration of these ideas. No consideration is given in this report to the matter of presoaking chips to assist penetration. This report is concerned only with standard methods in which chips, chemicals and water are present in usual amounts. No member of the committee who replied to this request considered penetration inconsequential, but there did seem to be a lack of uniformity in ideas as to whether penetration occurred rapidly or required elevated temperatures.

From the data submitted, it appeared possible to divide the factors upon which penetration depends into at least five classifications:

* Progress Report of the Alkaline Pulping Committee of the Technical Association of the Pulp and Paper Industry.

[1]Member TAPPI, director of research, Champion Fibre Company, Canton, N. C.

1. Species of Wood

There can be little doubt but what penetration varies with the species. Inasmuch as the structure of wood in various species, according to the dendrologist, varies considerably, it seems reasonable to believe that such difference in structure would assist or retard penetration. Then, again, in those woods containing a considerable amount of rosin, the ducts through which penetration takes place are more or less clogged with the rosin, so that a resinous wood should give more resistance to penetration than a more porous non-resinous wood.

2. Size of Chips Used

The influence which the size of the chips has on penetration is very clearly brought out by one member who cites the following:

At his mill there was rather recently installed a new type screen and in this connection a number of tests were made on the chips before and after the installation. These tests consisted of screening a daily composite sample of the chips to determine the average size and also the relative proportion of "fines" and oversize. This more selective screening resulted in a noticeably softer and better cooked pulp as well as a decrease in the quantity of pulped screenings. In varying the average size of chips, it was noticed that when the size increased the pulp became harsher and the screenings more apparent, while with a lower average size of chips, the reverse seemed to be true. While this is nothing more than would be expected, it indicates the importance of chip preparation in regard to the penetration rate, and, as a member points out, due to a difference in chip preparation, it is quite probable that one mill will find penetration occurring at one temperature while in another mill it might be quite different.

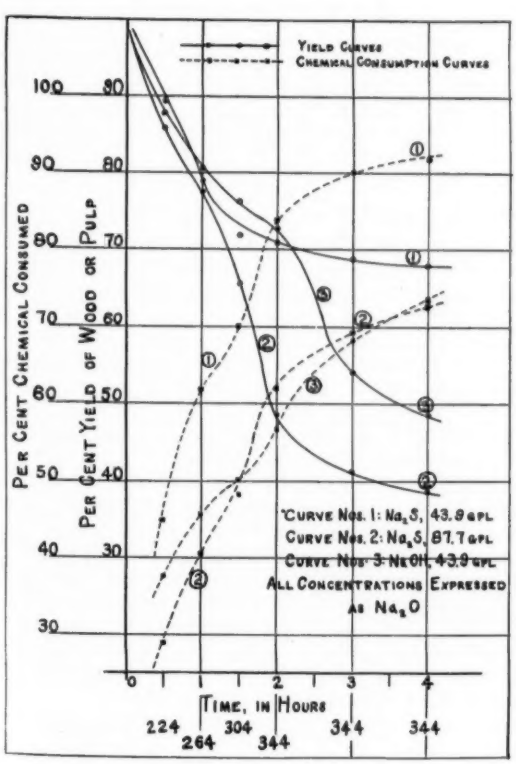
3. Moisture Content of the Chips

No experimental evidence was submitted on this point, but several members point out the fact that moisture must be a factor, because if a chip were saturated with water, penetration would then have to occur by diffusion, while in a dry chip, penetration would have to occur by displacement of air. It is thought, therefore, that the higher the moisture content the easier penetration should be.

4. Temperature of the Digester

One member stated that penetration begins as soon as the liquor comes in contact with the chips and in the case of non-resinous woods continues very rapidly as the temperature and pressure increase. Pine, pulped in a northern mill, showed penetration indication at 220 deg. F. according to one member, while one southern mill believes that penetration on pine is not apparent until 280 deg. F., is reached; still another southern mill, working with pine, considers 264 deg. F., the point of active penetration.

Another member cites mill experience to throw some light on this subject. In an experiment to determine the decrease in caustic soda concentration at various stages of the cook, evidence was apparent that penetration of the chips was well under way at lower temperatures. In this particular mill, it was the habit to add liquor to the digester about half an hour before placing on the cover and turning on the steam. In this instance, so this member advises, it was found that the concentration of caustic soda in grams per liter fell off 30 per cent in this half-hour period, in spite of the fact that no steam was added and the only dilution possible was from the moisture present in the chips, which amounted to about 4 per cent of the total volume of the liquor. The falling off in caustic soda concentration just about equalled that amount observed during the first one and one-half hours of the cook, after turning on the steam.



Another member mentioned that when the temperature rises to approximately 310 deg. F., pressure in the digester drops off about five pounds and shows no inclination to rise although the digester temperature is increased. This mill has been inclined to interpret such a condition to the act of penetration of the liquor into the chips which would offset the rise in pressure that might be expected with increased temperature. This condition holds for only about fifteen minutes.

One member feels that pressure is one of the most important things to consider, claiming that inferior pulp is usually the result when the minimum time is used to come to pressure. Inasmuch as high pressure means high temperature, it seems that pressure and temperature are somewhat synonymous.

Table I shows the effect of temperature on penetration:

TABLE I. SODA PINE COOKS

Temperature Maximum	Time, in Hours: To Temp.	At Temp.	Total	Remarks
264 deg. F.	1	0	1	Penetration poor
264 deg. F.	1	1	2	Penetration fair
264 deg. F.	1	2	3	Penetration good
304 deg. F.	1.5	0	1.5	Penetration fair
304 deg. F.	1.5	1	2.5	Penetration apparently good
304 deg. F.	1.5	2	3.5	Penetration good
344 deg. F.	2	1	3	Pulping begun

The graph accompanying this report contains some very interesting information on the subject of penetration. The contributor has made laboratory digestions on southern pine with the same ratio of wood to liquor in all cases, but varying the concentration of the chemical used. Both sodium sulphide and sodium hydroxide have been used as pulping agents. The graph shows the amount of fibrous material left at various intervals during the pulping operation. These values were obtained by making a series of runs and stopping the pulping at the different times indicated. By so doing it was possible to make a very careful yield determination as well as an analysis of the chemical consumed. It will be noticed that when the temperature of 264 deg. F. is reached there is a definite slacking off in the amount of chemical consumed, and at 304 deg. F., the increase of chemical consumed starts again only to show another drop in the rate of consumption around 343 deg. F. It is felt by the contributor as well as the writer that this period from 264 to 304 deg. F. is one where penetration occurs in the chips, and the reason the consumption drops off at 344 deg. F. is because the more rapidly reacting substances have been disposed of and the concentration of caustic is relatively less than it was at the lower temperatures. It will be recalled, however, that these results were obtained in the treatment of a resinous wood. Earlier in this report it was pointed out that the rosin content of a wood likely has some bearing on the penetrability thereof. Therefore, it is quite possible that the penetration period would have been evident at a lower temperature had this study been repeated on a non-resinous wood. Consideration of complicating factors such as this will help to reconcile the discrepancies noted in the estimates of temperature of penetration.

Another member in his discussion has given a citation which closely corroborates the interesting observations just mentioned. His reference is to an address delivered by Prof. Carl Kullgren before the Royal Academy of Engineering Science in Stockholm on May 19, 1927. In studying the change in alkalinity during cooking, Professor Kullgren noticed that a pause or a marked slackening of the action of caustic soda occurred at 266 to 302 deg. F. After reaching 320 deg. F., however, the dissolving action appears to set in again. In cooking with liquor containing sulphide such a period of stagnation either does not occur or is barely perceptible, the alkali content in this case continuing to decrease uniformly. Prof. Kull-

gren is inclined to explain this slackening off as due to a new set of reactions starting in at this temperature. However, it is the feeling of the writer that the reactions in the pulping process are so many and so complicated that it is a most unusual circumstance to have them segregated into such types of reactions.

5. The Relationship of Time With the Other Factors

In cooking kraft in rotary digesters a certain amount of time is necessary to reach the maximum cooking temperature and pressure. Several members feel that the method in approaching the maximum temperature is the most important consideration. One mill in which a member is acquainted has a cooking schedule in which thirty minutes is taken to go from 140 to 280 deg. F. At this latter temperature, the temperature is allowed to idle for forty-five minutes. The steam is then turned on and seventy-five minutes is taken to go from this 280 to 350 deg. F. During this latter period the digester is allowed to breathe through the gas vent line. At this 350 deg. F., temperature the digester is allowed to continue until the degree of pulping is obtained. Apparently, therefore, this mill considers forty-five minutes at 280 deg. F., a suitable period in which penetration can occur.

In the tests cited in Table I, penetration of the chips was determined by their ability to either float or sink in water. It will be further noticed that in these runs on pine, penetration at 264 deg. F., is only fair after two hours and even at 304 deg. F., penetration is not considered complete after one and one-half hours. This evidence shows that penetration is by no means instantaneous and that inasmuch as a considerable time factor must be allowed, the type of cooking curve used is all important.

Chemical Paper Testing Methods*

Although less inter-laboratory testing was done in 1932 than in the previous year, chiefly because of business conditions, the Subcommittee on Chemical Methods was able to review two published methods, namely, those for active sulphur and for total resins; consider one proposed method, namely, the determination of iron in paper; and to make progress in the development of an electrometric method for the determination of total acidity. The items will be discussed in the order listed above.

1. Review of Method for Active Sulphur

A method entitled "Quantitative Estimation of Minute Quantities of Reduceable Sulphur" by Scherer and Sweet published in the analytical edition of the Journal of Industrial and Engineering Chemistry for January 15, 1932, apparently contained certain improvements over the official Technical Association method and was studied to learn whether it would be advisable to revise the TAPPI method. The principle changes as set forth in the Scherer and Sweet method consist in the use of aluminum foil instead of zinc, and a modified shape of outlet tube whereby the evolved gas is brought into contact with both sides of the lead acetate test paper, instead of one side only as in the TAPPI method. The results of comparison tests, made on three papers by both methods, apparently indicate slightly better agreement in test results by the TAPPI method but generally higher results by the Scherer-Sweet method. The Scherer-Sweet method as published states that their method is useless for material with a sulphur content of more than 0.0001 grain. In the tests made by the Scherer-Sweet method, the two sides of the test strip were stained unequally. Both methods require approximately the same length of time to make a test. The general indications of the results of the comparison tests seem to be that the TAPPI method with the possible substitution of aluminum for zinc is satisfactory for rating anti-tarnish tissues when adhered to strictly.

2. Review of TAPPI Official Method for Quantitative Determination of Resin in Paper

Reports were received that the present official method is not sufficiently accurate in two respects; first, that the time of extraction is too short, and second, that occasionally paper samples are encountered which contain non-resinous matter, apparently either a fat, a grease, or a wax, which is included in the extracted resins as weighed, thereby giving high results. Tests made by one laboratory indicate that the second criticism is justified and that amounts of non-resinous extract in excess of 0.2 per cent can occur. With the redution of speified resin limits to as low as 0.5 per cent, this becomes important. It is proposed, therefore, to incorporate a note in the official method that where this occurs the final residue as obtained by the present official method, after weighing, be saponified and any unsaponifiable material found be deducted from the weight of the residue.

The question of length of time of extracting has not been definitely decided. Using three papers ranging from 1.5 to 3 per cent resins, results were obtained agreeing within 0.1 per cent when using the TAPPI official method, extracting for "12 washings", as specified. (This represents from 2 to 2¼ hours when using a Soxhlett extractor.) However, as one member has test data indicating that in some cases a longer extraction up to 12 hours, is necessary, it is proposed to repeat the tests using a wider selection of papers.

3. New Method Considered

During the year a method for the determination of acid soluble iron in paper was discussed, but more work will be necessary before a method can be proposed. At the present time, we are not sure of which type of iron present in paper is harmful and the one for which a method should be developed. It is proposed to keep this method under consideration for some time longer.

4. Development of an Electrometric Method for the Determination of Total Acidity

Of the methods studied, that of B. H. Clarke and L. A. Wooten has so far proved to be the most desirable. The method was originally published in the analytical journal of Industrial and Engineering Chemistry, issue of October 15, 1930. It uses comparatively inexpensive apparatus, is simple and rapid. Results can be obtained in 15 to 20 minutes, as compared with 3 hours for the present TAPPI official chemical method, or 15 minutes for the ASTM chemical method. Comparison tests of uncoated paper, both sized and unsized, by the Clark-Wooten and the TAPPI methods gave results agreeing within the variation between check tests made by the TAPPI method. However, the Clarke-Wooten method will probably require some modification in order to be applicable to coated papers. The study of this type of use is still under way. The Committee's work for the coming year will therefore be with the electrometric method for acidity, completion of the review of the method for resins and such new work as is referred to it.

P. F. WEHMER, *Chairman*
Electrical Testing Laboratories
New York, N. Y.

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., February 13-16, 1933.

A Survey of the Drying of Paper and Cellulosic Papermaking Materials*

By F. A. Simmonds[1]

Abstract

An outline of the variables recognized in the drying of paper and cellulosic papermaking materials has been prepared and used as the basis of a survey of the relevant literature, the results of which are presented. Published work dealing with the drying of pulpwood, pulp, stuff, and paper, especially with the drying procedure preliminary to evaluation of these materials, is cited.

Introduction

A large number of the physical and chemical test procedures used in the evaluation of pulpwood, pulp, stuff, or paper involve the drying of the cellulosic material of the sample. It has long been recognized that certain components of these materials are more or less unstable and that the preliminary drying treatment may cause changes in the composition or in important physical characteristics of the sample, a circumstance that obviously should be avoided if possible. A survey of the literature on this subject has been made, therefore, as a preliminary step in the standardization of the drying procedure, or as a basis for further investigation of the drying of cellulosic materials should such a step prove necessary.

In order to systematize this search an outline of as many variables of the drying procedure as could be recognized was set up and for convenience is given below. The attempt to detail the outline as much as possible has resulted in some overlapping.

The Variables of Drying

I. Type of Material
- A. Pulpwood (ground to pass 40 to 60 meshes to the inch)
- B. Pulp (includes cellulose as isolated by Forest Products Laboratory Method No. 33)
- C. Stuff
- D. Paper (includes test sheets)

II. The Chemical and Physical Properties of the Material
- A. Volatile constituents
- B. Presence of alkalies, or acids, or acid salts, or chlorine
- C. Structure
  1. Surface
     - a. Area
     - b. Contour
  2. Density
  3. Thickness (relating to sheets)
  4. Gel shrinkage in relation to the diffusion of water from the interior to the surface
     - a. As affected by mechanical processing

III. The Conditions of Drying
- A. The drying oven
- B. The temperature of the drying atmosphere
  1. The effect on the rate of evaporation
  2. The effect on the chemical and physical properties of the material
- C. The time of drying
  1. The effect on the chemical and physical properties of the material
- D. The relative humidity of the drying atmosphere
  1. The effect on the physical properties of the material
  2. The effect on the final moisture content of the material
- E. The effective velocity of the air over the surface of the material
- F. The uniformity of air distribution

The literature sources examined in making the summary included "Chemical Abstracts," "The Chemistry of Cellulose and Wood," by A. W. Schorger, 1926, "Bibliography of Papermaking Literature," by C. J. West, 1928, and the supplemental bibliographies subsequently published by West in the Paper Trade Journal. All references from these sources patently bearing on the subject under consideration were examined, either in abstracts or in the original publication, but the search did not include a scrutiny of citations seemingly not directly pertinent to the original objective.

The data assembled by means of the survey have been found to answer, with a fair degree of completeness, the questions raised in the outline, and on the basis of the facts thus developed an electric drying oven of special design has been built for the drying of test sheets used in the pulp-evaluation procedure The details of this oven and its operation in service will be described in a later report.

The immediate results of the survey are embodied in the following elaboration of the foregoing outline.

I. Type of Material

A. Pulpwood (Ground to Pass 40 to 60 Meshes to the Inch)

In comparing methods of drying Schorger (*23*)[2] found that heating sawdust in an air oven at 105 to 107 deg. C., removed more moisture than drying the material in a dessicator over fresh, concentrated sulphuric acid or heating it in a vacuum at 55 to 60 deg. C. Obviously such comparisons must always be modified if volatile constituents are present, the effects of which are indicated later under II-A. Schorger's observation is in agreement with the statements of Obermiller and Goertz (*19*) and Jentgen (*11*) that the adsorbed moisture in cellulosic material is held more tenaciously than that in the reagents ordinarily used as dessicators.

B. Pulp

Renker (*21*) agrees with Schwalbe (*24*) that a drying atmosphere at a temperature of 105 to 107 deg. C., removes all hygroscopic moisture without appreciable effect on the pulp. König and Huhn (*13*) were also of the same opinion.

Davis (*5*) dried a number of pulp samples to constant weight at 100 deg. C., and then increased the temperature to 105 deg. C. Invariably a further loss in weight occurred. In some instances the temperature of 105 deg. C. was followed by an increase to 110 deg. C., whereupon a second decrease in weight was noted. The differences are

---

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., February 13-16, 1933

[1] Member TAPPI, assistant chemist, Forest Products Laboratory, Madison, Wis.

[2] Numbers in parentheses refer to Literature Cited at the end of the article.

of the order of 0.25 per cent per 5 deg. C. He recognized the fact that at 110 deg. C. the loss in weight may represent volatile constituents rather than water.

A more comprehensive report by Herzberg and Rudeloff (*8*) presents data in contradiction to those of Davis. The pulps employed were:

(1) Unbleached sulphite
  (a) Thoroughly washed
  (b) Partly washed
(2) Bleached sulphite
(3) Bleached soda
(4) Unbleached soda
(5) Bleached straw

These samples were dried as shown in Table I, where the results are summarized. From these data it appears that in drying chemical pulp the kind of pulp is not a variable.

TABLE I

A COMPARISON OF THE EFFECT OF DRYING TEMPERATURES AND METHODS ON THE MOISTURE CONTENT OF CHEMICAL PULPS

Drying Method	Per cent of Moisture at— 20°-25° C	90° C.	105° C.	120° C.
(1) To constant weight at 25° C. with dr. air, then at 105° C.	42.05 (+0.53)*	....	41.82	....
(2) To constant weight at 25° C. with nitrogen, then at 105° C.	42.31 (+0.59)*	....	42.06	....
(3) To constant weight at 90° C. with air, then at 105° C.....	....	41.96 (—0.14)*	42.02	....
(4) To constant weight at 90° C. with nitrogen, then at 105° C.	....	41.93 (0.00)*	41.93	....
(5) To constant weight at 90° C. in an oven, then at 120° C.....	....	42.17 (0.00)*	42.17	42.15 (—0.05)*
(6) To constant weight at 105° C. in an oven, then at 120° C.....	....	....	42.40	42.30 (—0.24)*
(7) To constant weight at 25° C. in a vacuum, then at 105° C., then in an oven at 120° C.....	41.90 (+0.22)*	....	41.81	41.80 (—0.02)*
(8) In a vacuum at 90° C. and 105° C. and then in an oven at 120° C.....	....	41.68 (0.00)*	41.68	41.64 (—0.09)*
(9) In an oven at 90° C. and 105° C. after saturation with water	....	41.82 (+0.41)*	41.65	....

* The percentage deviation from the measurement at 105° C. is given in parentheses.

Also there is no indication that oxidation sufficient to cause an increase in weight has occurred.

C. Stuff

In a comparison of the rates of evaporation of water from discs of unbeaten and beaten sulphite pulp Rowe (*22*) found a decrease for the beaten pulp during that portion of the drying where the rate of diffusion of internal moisture was controlling.

D. Paper (Including Test Sheets)

What has been said regarding the drying of pulp and stuff in moisture determinations is also applicable to paper and to test sheets, except for the fact that the drying of paper is usually complicated additionally by the presence of the materials of the furnish.

II. The Chemical and Physical Properties of the Material

A. Volatile Constituents

Bateman and Beglinger (*2*) found that the determination of the moisture of a resinous wood by drying it at 110 deg. C. in air may be in error from 0.5 to 9.9 per cent. This error was ascribed to the loss of turpentine and rosin. A similar error would be introduced in a pulp containing volatile constituents.

B. Presence of Alkalies, or Acids, or Acid Salts, or Chlorine

Zweigler reported (*30*) that on heating various pulps, some lignin-free but all containing absorbed or dried alkalies, at 110 deg. C. for 4 to 5 hours, an increase in weight occurred. He attributed this increase to the combined action of the absorbed alkali and the atmospheric oxygen which he believed resulted in the formation of "oxycellulose."

Jarrell, Hankins, and Veitch (*10*), using the accelerating effect of heating the samples for 72 hours at a temperature of 100 deg. C., found that small quantities of aluminum sulphate, sulphuric acid, or hydrochloric acid in rag bond waterleaf paper caused a rapid deterioration in its strength properties.

Rasch (*20*) found that heating rosin-sized paper for 72 hours at 100 deg. C. decreased the alpha-cellulose content of the paper.

The hydrolytic action of acids on cellulose requires no discussion.

No data regarding the effects of heating cellulosic materials in the presence of small amounts of chlorine were found.

C. Structure

1. *Surface*

a. Area. It is a well-known principle of drying that the rate of evaporation of water from a material is directly proportional to the magnitude of the surface area from which the evaporation occurs. Insofar as the materials classified under (I) are concerned the actual surface area is the drying area only as long as free water (total water minus bound and equilibrium moisture) is present. Both Rowe (*22*), using pulp discs, and Sherwood (*26*), using sheets of news print paper, have shown that the rate of evaporation of the water is constant during the first part of the drying but decreases later, that is to say, decreases during the evaporation of the free water and before the rate of internal moisture diffusion becomes the controlling force through its reduction of the effective area of evaporation.

b. Contour. Sherwood (*26*) has mentioned a possible relation between surface contour of pulp and paper sheets and the rate of evaporation of water from them.

2. *Density*

The data concerned with this property relate only to changes in density effected as described under II-C-4.

3. *Thickness (relating to sheets)*

Rowe (*22*) observed the rate of evaporation of water from discs of unbeaten sulphite pulp to be independent of the size and proportions of the disc. Sherwood (*26*) found the same to be true for sheets of news print paper. These data, however, relate to only one set of drying conditions. It is interesting to note that Fisher (*6*) showed the rate of evaporation of water from wool fabrics to be inversely proportional to the thickness.

4. *Gel shrinkage in relation to the diffusion of water from the interior to the surface.*

The question of gel shrinkage is of course limited to sheets of pulp and of paper insofar as density changes are concerned. The shrinkage, in turn, depends largely upon the processing to which the pulp has been subjected. As mentioned under I-C, Rowe (*22*), in a comparison of the rates of evaporation of water from discs of unbeaten and beaten sulphite pulp, found a decrease for the beaten pulp during the portion of the drying in which the rate of internal moisture diffusion was controlling. McCready (*16*) in an excellent study on the mechanism of air drying has confirmed this. He has divided shrinkage into two classes:

"1. Shrinkage caused by the collapse of the structure of the solid as free water is removed. The amount of this shrinkage may equal the total volume of free water removed or less.

"2. Shrinkage caused by the shrinking of the individual particles of the solid as they lose their bound-water content. This case is limited to materials that

change in dimension with the amount of hydroscopic moisture held."

Cameron (*4*) observed that oven-dried test sheets of beaten pulp reabsorb moisture at a rate practically the same as that of the sheets made from the corresponding unbeaten pulp.

III. The Conditions of Drying

A. The Drying Oven

Every good drying oven is a combination of specific characteristics selected as essential in obtaining the desired processing.

B. The Temperature of the Drying Atmosphere

1. *Effect on rate of evaporation*

In general, the rate of evaporation increases with rise in temperature when other conditions remain constant.

2. *Effect on chemical and physical properties*

Campbell and Booth (*3*) determined the effect of air-, kiln-, and oven-drying on the chemical characteristics of oak wood ground to pass 80 to 100 meshes to the inch. In the last method the samples were kept at a temperature of 105 deg. C. for 200 hours. It was found that: (1) the air- and kiln-drying of wood are associated with chemical changes in the furfuraldehyde-yielding complexes of wood substance such that total pentosans are depreciated while the pentosan content of the cellulose is enhanced, and an increase in the analytical value representing the amount of lignin was noted; (2) the oven-drying resulted in an increase in lignin value and a slight amount of hydrolysis of the carbohydrate components, which was more marked in the heartwood.

Schorger (*23*) stated that no error is introduced in the determination of the moisture content of sawdust when carried out in an electrically heated air oven at 105 to 107 deg. C. and it is more efficient than drying under a vacuum. The data underlying these conclusions are given in Table II.

TABLE II

COMPARISON OF THE AMOUNTS OF MOISTURE REMOVED FROM SAWDUST WHEN DRIED UNDER A VACUUM IN AIR AT 105 DEG. TO 107 DEG. C.

Sample	Apparatus	Temperature, Deg. C.	Time of Heating, Hours	Weight of Sample, Grams	Loss in Weight: Grams	Loss in Weight: Per cent
A	Electric oven.....	105–107	7	4.0963	0.2811	6.86
B_1	Vacuum; pressure 60 mm.	55	7	3.2229	.2128	6.60
B_2	Vacuum; pressure 30 mm.	57	6	3.2229	.2181	6.77
B_3	Vacuum; pressure 3 mm.	60	8½	3.2229	.2178	6.76

TABLE III

THE EFFECT OF PROLONGED HEATING ON BASSWOOD SAWDUST

Period of heating, Hours	Total time of heating, Hours	Decrease in weight, Per cent
3	3	5.91
4	7	5.89
4	11	5.91
10	21	5.95
8	29	6.03
15	44	5.96
48	92	6.00
69	161	6.23
98	259	5.99
191	450	6.38
261	711	6.43

TABLE IV

THE EFFECT OF PROLONGED HEATING ON LONGLEAF PINE SAWDUST

Period of heating, Hours	Total time of heating, Hours	Decrease in weight, Per cent
3	3	4.94
4	7	4.95
4	11	4.94
10	21	5.05
8	29	5.13
15	44	4.98
48	92	5.23
69	161	5.65
98	259	5.56
191	450	6.04
261	711	6.35

C. The Time of Drying

1. *The effect on the chemical and physical properties of the material*

Schorger also determined the effect of prolonged drying at 105 and 107 deg. C. on the weight of sawdust. These data are given in Tables III and IV. He concludes that

"The weights of both woods remained practically constant during 18 hours heating. The total loss for the longleaf pine during the last 708 hours heating was 1.41 per cent while that for the basswood during the same period was only 0.52 per cent. Since the longleaf pine contained 9.23 per cent of resin the increased loss in this case was to be expected."

Hawley, Wiertelak, and Harris (*7*) have shown that heating both wood and lignin-free wood cellulose in sealed tubes at 135 deg. C. for periods of 1, 2, and 8 days respectively decomposes the carbohydrates with the formation of water-soluble and alcohol-benzene soluble substances and a lignin-like substance.

These results of Campbell, Hawley, and others show that the changes caused by the heating are a function of both time and temperature. They also indicate that a 4- or 5-hour heating at 105 to 110 deg. C. is not likely to result in a decomposition of the carbohydrates, although the possibility of the starting of an incipient reaction that would effect subsequent determinations is still an open question.

With pulp, a considerable portion of the published matter concerns commercial drying equipment.

Lewis (*14*) in a discussion of a drying plant for pulp stated that too high a temperature causes shrinkage and warping sufficient to injure the fibers by breaking them.

Babbitt (*1*), in a comparison of atmospheric and vacuum-dried pulp, found the bursting and tearing strengths of the vacuum-dried pulp to be practically the same as those of the wet pulp. He also concluded that the oxidation and hydrolytic effects were decreased and the color and absorbency improved in the vacuum drying. These experiments were made with the Fidalgo pulp-drying system, which operates at a temperature of approximately 100 deg. F. (38 deg. C.).

Kehoe (*12*) had previously reported that Fidalgo-dried pulps reached the same maximum bursting strength in pebble milling as the wet-lap pulp but that the strengths during the development period were less.

Winterstein (*29*) found cellulose yielded increased amounts of glucose after having been held at a temperature of 105 deg. C. for 48 hours. Hans Hofmann (*9*) reported that sulphite cellulose and paper undergo a chemical change upon drying at an initial temperature of 90 deg. C. with an increase to considerably above 100 deg. C., and that the change was also dependent upon the time. This change rendered the cellulose more easily attacked by acid but the sugar obtained from it, xylose, was the same as before. Straw, wood, and rye were not affected by drying at 100 deg. C. On the other hand Renker (*21*) isolated equal amounts of Cross and Bevan cellulose from samples of unbleached sulphite pulp, some of which had been air-dried and some heated at 105 to 107 deg. C. for 48 hours. Furthermore, a portion of this material, held at a temperature of 105 to 107 deg. C. for several days did not show an increased yield of glucose as compared with the air-dried cellulose.

Zweigler (*30*) showed that atmospheric oxygen has no action at 110 deg. C. on "pure" cellulose. This confirms the conclusion reached by the Royal Prussian Testing Institute (*31*), which is stated as follows:

"The values ascertained at 90 and 105 deg. C. for the percentage of dry constituents are technically to be con-

sidered as equivalent. Even when cellulose is dried at temperatures up to 120 deg. C. no such considerable decomposition occurs that the percentage of dry constituents is affected to a degree important in practice, not even if the pulps are incompletely washed. The total result of the tests can be summarized by saying that the customary determination of the dry constituents of celluloses at 105 deg. C. is perfect and supplies reliable values."

In this statement the effect of the relative humidity of the drying atmosphere is not considered. Therefore, for exactness, the conclusion should necessarily be modified according to Section III-D. The fact that Zweigler observed such small percentage increases in the weight of pulps upon heating them in air at 110 deg. C. for 5 hours makes it desirable to quote his actual data, which are shown in Table V.

TABLE V

DATA OF ZWEIGLER—EFFECT OF HEATING PULPS IN AIR AT 110 DEG. C. FOR FIVE HOURS

Sample	Percentage increase in weight
Cotton, unbleached	0.04
bleached	.03
Linen, unbleached	.06
bleached	.03
Soda pulp, unbleached	.07
Sulphite pulp, unbleached	.04
bleached	.03
Mechanical wood pulp	.01
Straw pulp	.08

In studying the effect of oven-drying on the strength of test sheets, Cameron (*4*) found that the oven-dried sheets were from 10 to 15 per cent weaker than the corresponding air-dried sheets. He also observed that temperatures up to 100 deg. C. had little effect on the strength of sheets made from unbeaten pulp and those made up from beaten pulp withstood temperatures up to 120 deg. C. with little evidence of deterioration when compared among themselves.

Sutermeister (*28*) found, in a comparison of air-dried sheets with sheets dried by holding them against the surface of a dryer cylinder by means of tightly stretched felts, that the air-dried sheets were from 25 to 43 per cent stronger. He accounts for the difference in his results and those of Cameron's by the effect of tension during drying.

For paper, Müller and Trenschel (*18*) present a different viewpoint in regard to vacuum-dried pulps. They report a series of paper-making experiments in which they found cylinder-machine and Fidalgo-dried pulps to be of identical quality and inferior to wet-lap pulp. Their data, however, seem to be an isolated instance of its kind.

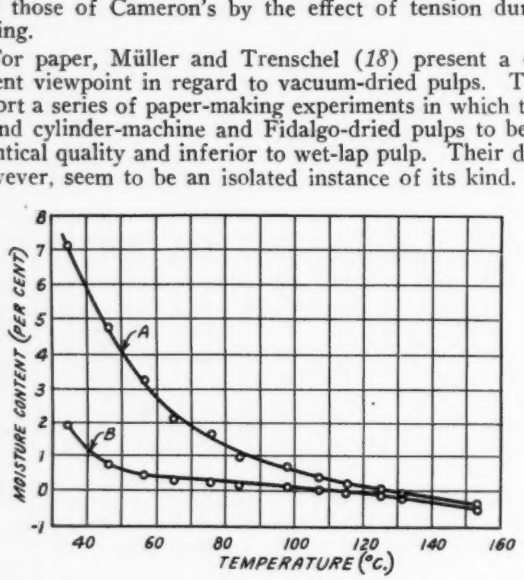


FIG. 1
Comparison of the drying efficiency of dry and moist air. A—Moist air. B—Dry air.

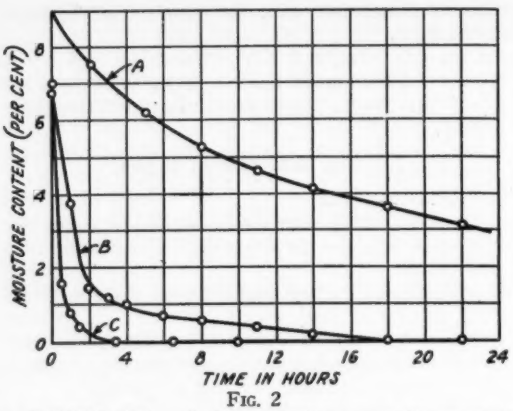


FIG. 2
Drying of Sulphite Pulp. A—Over phosphorus pentoxide at atmospheric pressure. B—Over phosphorous pentoxide and under vacuum. C—In an air stream at 90 deg. C.

Minton (*17*) states that if a sheet of paper has once been over-dried it can never be brought back by moisture reabsorption to test high in a strength property of any kind, but that the rate of drying does not affect the sheet provided all other factors about the drying are kept in their correct proportions. The temperature range used in Minton's study was from 85 to 335 deg. F. (29.5 to 168 deg. C.).

D. The Humidity of the Drying Atmosphere

1. *The effect on the physical properties of the material*

The importance of relative humidity, especially in precise research work, becomes increasingly evident with study. Obermiller and Goertz (*19*) found that drying cotton at 105 to 110 deg. C. in moist air gave unsatisfactory results. They stated that fibers have a hygroscopic power (*11*) equal to phosphorus pentoxide, and hence can not be dried in moist air even at 110 deg. C. A certain equilibrium, depending upon temperature and relative humidity, is established with the air. When a stream of dry air is used, complete drying of the sample can be attained even at low temperatures; the temperature affects only the speed of the process. Relative humidities of both 55 per cent and 35 per cent prevented satisfactory drying at a temperature range of 105 to 110 deg. C. Samples heated for 3 to 5 hours at a temperature range of 85 to 90 deg. C. in a current of dry air yielded complete drying with an accuracy of 0.01 per cent on a 10-gram sample.

2. *The effect on the final moisture content of the material*

Renker (*21*) had previously compared the efficiency of several methods for removing moisture from sulphite pulp. The curves in Figure 1 illustrate the relation between the relative humidity of the air, the drying temperature, and the moisture content of the sulphite pulp. Curve B emphasizes the necessity of a dry atmosphere if excessive drying temperatures are to be avoided. Although the curve shows that a temperature of 110 deg. C. is required to dry the material completely, the later work of Obermiller and Goertz (*19*) indicates that under correct conditions a lower temperature was effective.

The curves in Fig. 2 supply a comparison of the rates of drying pulp under three different conditions, namely, over phosphorous pentoxide at ordinary pressure, over phosphorous pentoxide under reduced pressure, and in an air stream at 90 deg. C. The third method appears to be the most efficient.

Merschalleck (*15*) has made a rather extensive study of drying beechwood in streams of dry air at temperatures

ranging from 62 to 145 deg. C. The interpretations that he made of his results are:

1. At each temperature below 105 deg. C. an equilibrium weight condition exists in which the wood retains a portion of the original moisture, the amount depending upon the temperature.
2. A very slight distillation occurs at 105 deg. C. one which is greatly increased at 115 deg. C.
3. This distillation was apparent before an absolutely dry condition was reached (proof of this observation is not clearly stated).
4. The moisture condition of individual specimens in an air-dry equilibrium condition differs; the capacity to hold more or less water in a given relative humidity is one of the peculiar properties of an individual specimen. This property appears to depend upon density, since the heavier specimens held less moisture in a given equilibrium weight condition.
5. From the shapes of the curves relating loss in weight during the time of exposure to dry air, it appears that the wood was brought near but not to a condition of absolute dryness when heated to 100 deg. C. in dry air.
6. A temperature of 95 deg. C. should be used in drying wood (this conclusion is at variance with that of most observers).

E. The Effective Velocity of the Air Over the Surface of the Material

Sherwood (*26*), drying pressed blocks of sulphite pulp with an initial moisture content of more than 100 per cent (dry basis) in a small tunnel dryer, found that the rate of evaporation to be proportional to the 0.6 power of the air velocity over a range of from 2 to 15 meters per second. The evaporation was forced to occur at the faces parallel to the flow of air by sealing the edges of the blocks with waterproof cement.

In the article by Lewis (*14*), previously referred to, it is stated that the air velocity should be sufficient for the air to take up 40 to 50 per cent of the amount of water that it can theoretically absorb at a given temperature.

F. The Uniformity of Air Distribution

No citations bearing directly on this point were found.

Conclusions

(1) In determinations of the "dry" content of samples of pulpwood, pulp, stuff, and paper that do not contain volatile constituents, the sample may be heated at 105 deg. C. for 4 hours without causing an appreciable error in the result from chemical changes in the sample.

(2) If the volatile matter commonly found in some types of cellulosic material is present in the sample, the drying conditions as stated in (1) will introduce an error.

(3) In the ordinary drying procedure of heating the sample for 4 to 5 hours at 105 to 110 deg. C. in air containing moisture, the water in the sample is not completely removed because the material comes to equilibrium with the air and the moisture is shared.

(4) Changes in the chemical nature of cellulosic material can be induced by treatment with heat; the extent of the changes is a function of time and temperature.

(5) It is not advisable to heat samples at 105 deg. C. longer than 5 hours in determining the moisture content.

(6) In preparing samples for general analysis a circulating atmosphere of dry air at a temperature not exceeding 70 deg. C. is to be recommended.

(7) The drying of test sheets should be carried out by means of an atmosphere controlled in temperature and relative humidity. The temperature can probably be limited to 65 deg. C. as a maximum and a tentative value of 45 per cent selected for the relative humidity.

(1) Babbitt, J. S. 1931. Comparison of Atmospheric- and Vacuum-dried Pulp. Pulp and Paper Mag. Can. *31*, 813-6, 830-1, 842, 844.
(2) Bateman, E., and Beglinger, E. 1929. Proc. Am. Wood Preservers' Assn., p. 200.
(3) Campbell, W. G., and Booth, James. 1930. Chemical Aspects of the Drying of Timber. Biochemical J. *24*, 641-48.
(4) Cameron, E. P. 1924. Effect of Oven-drying on the Strength of Pulp Test Sheets. Pulp and Paper Mag. of Can. *22*, 448-50.
(5) Davis, G. K. 1923. Proc. Tech. Sec. Papermakers' Assn. Gr. Brit. and Ire., *4*, Pt. 1, 44.
(6) Fisher, E. A. 1923. Some Moisture Relations of Colloids. Roy. Soc. (London) Proc. (A) *103*, 157.
(7) Hawley, L. F., and Wiertelak, Jan. 1931. Effect of Mild Heat Treatments on the Chemical Composition of Wood. Ind. Eng. Chem. *23*, 184. Hawley, L. F., and Harris, E. E. 1932. Synthetic Lignin. Ind. Eng. Chem. *24*, 873.
(8) Herzberg and Rudeloff. 1909. Wochbl. Papierfabr. *40*, 3898.
(9) Hofmann, Hans. 1906. Papier Ztg. *31*, 4331.
(10) Jarrell, T. J., Hankins, J. M., and Veitch, F. P. 1932. The Effect of Inorganic Acids on the Physical Properties of Rag Bond Paper. Paper Trade J. *94*, No. 14, 28-33.
(11) Jentgen. 1910. Z. Angew Chem. *23*, 1544.
(12) Kehoe, R. D. 1928. The Fidalgo Pulp Drying System. Paper Trade J. *86*, 50-53.
(13) König and Huhn. Bestimmung der Zellulose in Holzarten und Gespinstfasern, p. 13.
(14) Lewis, A. T. 1907. Wood Pulp Drying. Paper Mill, *30*, No. 7, 106.
(15) Marschallek, Bodo. 1931. The Influence of Artificial Drying by High Temperature upon Beechwood. Forsthenutzungsinstitut der Forstlichen Hochschule zu Hann. — Münden.
(16) McCready, D. W. 1932. Drying of Pulp and Paper—I. This paper presented at the Fall Meeting of the Technical Association of the Pulp and Paper Industry, Holyoke, Mass. To be published in the Paper Trade Journal.
(17) Minton, Ogden. 1931. At What Temperature Should Paper Be Dried? Paper Trade J. *93*, 42-46.
(18) Müller, Fr. and Trenschel, R. 1931. The Fidalgo Pulp Drying System. Wochbl. Papierfabr. *62*, 23A, 25-35, C. A. *25*, 5986 (1931).
(19) Obermiller, J. and Goertz, M. 1924. Z. Angew. Chem. *37*, 940.
(20) Rasch, R. H. 1929. Paper Trade J., *83*, No. 8.
(21) Renker, Max. 1910. Bestimmungsmetoden der Cellulose, p. 18 Berlin. ——. Loc. cit., p. 107. ——. Loc. cit., p. 16.
(22) Rowe, J. W. 1927. Proc. Tech. Sec. Papermakers' Assn., Gr. Brit. and Ire., *8*, Pt. 1.
(23) Schorger, A. W. 1917. J. Ind. & Eng. Chem., *9*:556.
(24) Schwalbe. 1907. Ber. *40*:1347.
(25) Schwalbe and Sieber. 1922. Chemische Betriebskontrolle in der Zellstoff Industrie. p. 110. Berlin.
(26) Sherwood, T. K. 1929. Paper Trade J., *83*:134, No. 8.
(27) Suringar and Tollens. 1896. Z. angew. Chem., *9*:749.
(28) Sutermeister, E. 1924. Effect of Oven-Drying on the Strength of Test Sheets. Pulp and Paper Mag. Can. *22*, 615.
(29) Winterstein. 1893. Z. Physiol. Chem., *17*:393.
(30) Zweigler, Fritz. 1912. Papier Fabr. *10*:1364.
(31) ———. 1913. World's Paper Trade Rev. 59, No. 3, 52-53. Paper *10*, No. 9, 17.

Heat and Power Committee Annual Report*

There have been no major changes in the organization of the Heat and Power Committee during the past year. The committee includes four sub-committees specializing in the several types of work indicated by the titles of the sub-committees, which follow, together with the names of the chairman thereof.

1. Production and Transmission of Heat and Power
   Mr. A. G. Darling, Chairman.
2. Heat Utilization in Chemical Processes.
   Mr. R. S. Hatch, Chairman.
3. Heat Utilization in Pulp Drying and in Making Paper and Paper Board.
   Mr. A. E. Montgomery, Chairman.
4. Power and Lighting Requirements.
   Mr. Reginald Trautschold, Chairman.

It will be noted that, during the past year, the work of Mr. Trautschold's sub-committee has been further defined by adding the words "and lighting" to the title in order that this committee may handle data concerning the general subject of illumination.

There have been a few changes in the personnel of

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, New York, N. Y., February 13-16, 1933.

the sub-committees and two of them in particular are somewhat handicapped by lack of number of men engaged in the work. These are the sub-committees headed by Mr. Hatch and Mr. Montgomery which, including the chairman, consist of three men in one case and four in the other. If the officers of T.A.P.P.I. or any of the members know of good men who are specialists in these particular fields, the committee will appreciate advice thereon so that we may augment the personnel.

Inquiries Solicited

As stated last year, at about this time, one of the functions of the Heat and Power Committee should be to serve as an aid to the industry in answering questions regarding specific operating problems. As in the past, scarcely any opportunities have been presented for service of this kind, except occasionally through the "Special Inquiry" functioning of Mr. Macdonald's office. It has been suggested that more publicity regarding this possibility might lead to valuable results from an interchange of experience along the lines of the discussion of practical and theoretical operating problems.

Major Investigations

Three broad and general investigations inaugurated last year are still in the process of development, as follows:

1. The establishing of a general form or guide for the collection of data relative to power plant operating efficiencies and to the costs of steam and of electric power as a by-product of process steam. (Mr. Darling and sub-committee)
2. A comprehensive study on the rate of drying for paper and board machines. (Mr. Montgomery and sub-committee)
3. The collection and correlation of data regarding power requirements for auxiliary pulp and paper mill equipment. (Mr. Trautschold and sub-committee)

The subjects of these investigations are broad in nature and progress has been slow. Nevertheless, a good start has been made in all three cases and the work will be continued during the coming year.

As a result of the efforts of Mr. Darling and his sub-committee, there have been developed two forms as follows:

(a) Standard Power Plant Report.
(b) Comparison Power Plant Report.

These reports, together with Mr. Darling's comments, are to be made available to the Association at the Annual Meeting this year. It is hoped that they will be used as intended and will lead to an inter-change of operating experiences. In his report on the sub-committee activities for the past year, Mr. Darling has the following to say:

"The Power Plant Report, it is hoped, will form a ground work to assist plant operators and management to a better understanding of plant operation as well as showing where economies can be made. By checking with other plants, several results are expected,—namely, economies from the competitive incentive; instruction in how others operate their plants; and improvements to be gained from various types of plants."

Mr. Montgomery's committee is continuing the work of collecting data regarding drying rates on paper and board machines.

Last year Mr. F. C. Stamm of this committee presented a paper dealing with board machines in particular. This year the committee has collected sufficient data on kraft paper drying to present a paper by Mr. Montgomery containing additional information as to the effect of various factors influencing drying. The committee is continuing its work in connection with factors affecting the drying of newsprint paper and it is believed that the work will eventually include other grades and kinds of paper.

Mr. Montgomery states that his committee "has had splendid cooperation from some few mills and a disappointing indifference from others." This is a disheartening condition and should become less evident if the work of T.A.P.P.I. is to grow and become increasingly valuable in developing the type of information required to improve operating conditions and to reduce operating costs.

Mr. Trautschold is heading an effort to compile a symposium on power requirements for auxiliary pulp and paper mill equipment with a view to providing a dependable record of performance data for guidance in furnishing power capacity, gauging effectiveness of unit operations and as a measure of equipment obsolescence.

Considerable information relative to this work has already been received, but it is insufficient as yet to serve the purpose of the committee. All members of T.A.P.P.I. are invited to join in the work of the committee by sending to Mr. Trautschold or to Mr. Macdonald such information as they may have regarding actual power test data on beaters, jordans, winders, calenders, etc., etc. The report of the sub-committee as given on page 278 of last year's Technical Association Papers, Series XV, No. 1, dated June, 1932, should be read in connection with this suggestion of cooperation.

All of the above investigations are of a broad and general nature and the collection of statistics of the proper kind is slow, but good progress is being made and it is hoped that the results available this year will be a stimulus to further cooperation.

Mr. Darling's committee has also compiled data for an annual review of new developments in the equipment field. In order that there shall be no conflict with the activities of the Equipment Committee, it has been decided to limit the activities of the Heat and Power Committee in this direction to cover only such equipment as has to do with the generation of heat and power within the walls of the boiler room and the generating room. This work will, however, also include such things as new types of steam engines, if any, small turbines which may be located in the pulp or paper mill proper for auxiliary power, and also the subject of Diesel power.

The Heat and Power Committee will also concern itself with steam and power requirements of individual items of process equipment but will not go beyond this point, and the Equipment Committee, we understand, will handle all matters peculiar to the manufacture of pulp and paper but including also any new developments in sectional drives, winder drives, individual motor drives, etc.

In transmitting the Development Progress Report, Mr. Darling makes the following comment,—"The report indicates a healthy condition existing in many lines of production. Improvements are generally possible and the report appears to indicate that the results will yield paying returns to the producers and purchasers."

If any of the officers or members of T.A.P.P.I. know of good possibilities in the direction of securing valuable contributions to the program for the next annual meeting, or have in mind any subject to which particular attention should be given, their assistance will be appreciated.

M. H. Teaze, Chairman,
H. S. Ferguson Co., New York.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING MAY 13, 1933

CIGARETTE PAPER

American Tobacco Co., Pipestone County, Havre, 100 cs.; Champagne Paper Corp., Pipestone County, Havre, 399 cs.; P. J. Schweitzer, Laconia, Liverpool, 1 cs.; Standard Products Corp., Champlain, Havre, 43 cs.; Gluckman & Strauch, Champlain, Havre, 3 cs.; American Tobacco Co., Champlain, Havre, 100 cs.; De Manduit Paper Corp., Manhattan, Havre, 119 cs.; Champagne Paper Corp., Manhattan, Havre, 183 cs.

WALL PAPER

——, New York, Hamburg, 4 cs.

WALL BOARD

Treetex Corp., Wanja, Norneborg, 7,375 bdls.; Treetex Corp., Consul Olsson, Ornskoldsvik, 3,535 bdls.

HANGING PAPER

Universal Car Loading Co., Rochambeau, Havre, 2 cs.

PAINTED PAPER

W. H. S. Lloyd & Co., Rochambeau, Havre, 2 cs.

NEWS PRINT

Jay Madden Corp., Berlin, Bremen, 102 rolls; Perkins Goodwin & Co., Berlin, Bremen, 64 rolls; Jay Madden Corp., Manhattan, Hamburg, 106 rolls; ——, Manhattan, Hamburg 121 rolls; Perkins Goodwin & Co., New York, Hamburg, 307 rolls.

PRINTING PAPER

Armour & Co., New York, Hamburg, 59 rolls; H. A. Wilson, New York, Hamburg, 3 cs.

WRAPPING PAPER

Van Oppen & Co., Pr. Hayes, Genoa, 20 cs.; Yardley & Co., American Trader, London, 3 cs.; ——, American Trader, London, 4 cs.; C. Steiner, New York, Hamburg, 19 cs.

FILTER PAPER

H. Reeve Angel & Co., American Trader, London, 4 cs.; H. Reeve Angel & Co. Inc., Olympic, Southampton, 11 cs., 30 bls.; J. Manheimer, Olympic, Southampton, 159 cs.; Corn Exchange Bank Trust Co., Champlain, Havre, 33 bls.

TISSUE PAPER

P. J. Schweitzer, Pr. Hayes, Marseilles, 10 cs.; B. F. Drakenfeld & Co., Laconia, Liverpool, 2 cs.; Meadows Wye & Co., Laconia, Liverpool, 2 cs.

SURFACE COATED PAPER

Gevaert Co. of America, Black Heron, Antwerp, 59 cs.; Globe Shipping Co., Berlin, Bremen, 35 cs.; Phoenix Shipping Co., Manhattan, Hamburg, 4 cs.; Phoenix Shipping Co., New York, Hamburg, 1 cs.; ——, New York, Hamburg, 3 cs.

METAL COATED PAPER

National City Bank, Berlin, Bremen, 21 cs.; National City Bank, New York, Hamburg, 9 cs.; K. Pauli Co., New York, Hamburg, 11 cs.

COATED PAPER

Chas. Happel, New York, Hamburg, 1 cs.

PHOTO PAPER

Medo Photo-Supply Co., Olympic, Southampton, 2 cs.; J. J. Gavin, Olympic, Southampton, 4 cs.; American Express Co., New York, Hamburg, 22 cs.

PARCHMENT PAPER

Globe Shipping Co., Berlin, Bremen, 1 cs.

TRANSFER PAPER

F. L. Kramer & Co., Berlin, Bremen 30 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., Laconia, Liverpool, 2 cs., (simplex), 19 cs., (duplex); Sellers Transportation Co., New York, Hamburg, 7 cs.; Sellers Transportation Co., Europa, Bremen, 15 cs.

COVER PAPER

International F'd'g Co., New York, Hamburg, 4 cs.

PASTE BOARD

——, New York, Hamburg, 55 cs.

CARD BOARD

L. T. Piver, Champlain, Havre, 3 cs.

MISCELLANEOUS PAPER

Globe Shipping Co., Berlin, Bremen, 2 cs.; Corn Exchange, Bank Trust Co., Lisbon Maru, Kobe, 4 cs.; J. Romer, Lisbon Maru, Kobe, 3 cs.; C. H. Boulin, Champlain, Havre, 7 cs.; Keuffel & Esser Co., Manhattan, Hamburg, 26 cs., 46 rolls; C. Schleicher & Schull Co., New York, Hamburg, 6 cs.; A. Brown & Bro., New York, Hamburg, 3 cs.; Corn Exchange Bank Trust Co., Kinai Maru, Kobe, 4 cs.

BAGS, BAGGINGS, ETC.

Castle & Overton, Inc., Pipestone County, Havre, 73 bls.

rags; National City Bank, American Trader, London, 34 bls. rags; —, American Trader, London, 28 bls. rags.

OLD ROPE

Banco Coml Italiane Trust Co., Berlin, Bremen, 152 coils; National City Bank, American Trader, London, 117 coils.

GLUE STOCK, ETC.

——, Berlin, Bremen, 66 bags hide glue; ——, New York, Hamburg, 75 bags bone glue.

CHINA CLAY

L. A. Salomon & Bro., Laconia, Liverpool, 140 bags; Orbis Products Trading Co., Laconia, Liverpool, 120 bags.

CASEIN

T. M. Duche & Son, Southern Cross, B. Ayres, 15 bags; D. C. Andrews & Co., New York, Hamburg, 60 bags.

WOOD PULP

Castle & Overton, Inc., New York, Hamburg, 560 bls. wood pulp, 112 tons; Pagel Horton & Co. Inc., Consul Olsson, Gefle, 1,000 bls. sulphite; ——, Consul Olsson, Gefle, 625 bls. sulphite; ——, Consul Olsson, Ornskoldsvik, 918 bls. chemical pulp.

WOOD PULP BOARDS

Lagerloef Trading Co., Manhattan, Hamburg, 175 lbs., 25 rolls; H. Fuchs & Son, New York, Hamburg, 26 bls.

PORTLAND IMPORTS

WEEK ENDING MAY 13, 1933

Bulkley, Dunton & Co., Consul Olsson, ——, 375 bls. wood pulp; ——, Consul Olsson, ——, 1,155 bls. chemical pulp.

BOSTON IMPORTS

WEEK ENDING MAY 13, 1933

——, Pipestone County, Dunkirk, 94 bls. bagging; ——, Pipestone County, Havre, 300 bls. rags; Atkinson Haserick & Co., Pr. Hayes, Genoa, 1 cs. wrapping paper; G. F. Malcolm Inc., Laconia, Liverpool, 12 cs. tissue paper; W. W. Proctor Co., Laconia, Liverpool, 1 cs. tissue paper; F. S. Webster & Co., Inc., Laconia, Liverpool, 10 cs. tissue paper; Bulkley Dunton & Co., Iserholm, ——, 125 bls. wood pulp.

NEW LONDON IMPORTS

WEEK ENDING MAY 13, 1933

Treetex Corp., Consul Olsson, Ornskoldsvik, 2,780 bdls. wall board.

PHILADELPHIA IMPORTS

WEEK ENDING MAY 13, 1933

Castle & Overton, Inc., Pipestone County, Dunkirk, 86 bls. rags; Castle & Overton, Inc., Pipestone County, Havre, 159 bls. rags; E. J. Keller Co. Inc., Pipestone County, ——, 65 bls. rags.

BALTIMORE IMPORTS

WEEK ENDING MAY 13, 1933

——, Wanja, Kopmanholmen, 8,079 bls. chemical pulp, 1,325 tons; Bulkley Dunton & Co., Carlsholm, ——, 2,050 bls. wood pulp; Bulkley Dunton & Co., C. of Newport News, ——, 125 bls. wood pulp.

Union Bag Agreement Held Up

HUDSON FALLS, N. Y., May 15, 1933—At a meeting of the board of directors of the Union Bag and Paper Corporation in New York recently approval was given to the wage agreement made between representatives of the several labor organizations and President Alexander Calder of the company. It was understood that operations would be commenced at the Fenimore plant as soon as necessary repairs were made.

Information that the agreement had been approved was imparted to the former workers at a meeting late Friday in Odd Fellows hall. The workers were addressed by Arthur Huggins, secretary of the Paper Makers Union.

Mr. Huggins said that he was in receipt of a telegram from Matthew Burns president of the Paper Makers Union, which had been received by Mr. Burns, from President Calder. Mr. Burns had been called to International Falls, Minnesota, to attend a wage conference with President John P. Burke of the International Pulp, Sulphite and Paper Mill Workers' Union.

Secretary Huggins immediately got in touch with President Calder, who was in New York City and was informed that the agreement was satisfactory to the directors and that he would return to sign with the union officials.

President Calder asked for an amendment to the original agreement accepted by the members of the union organizations, to have five of the former employes of the machine shop which is under the supervision of the bag department, return to work. This the members unanimously voted to do. The men who are to return are members of the Machinists' Union and have been on strike since May 21.

President Calder met with Secretary Huggins and John A. Fitzgerald when it was expected the date for the commencement of repairs would be announced.

A meeting of the several labor organizations was also held, on April 27, when the tentative agreement as approved by President Calder was accepted by the men, and it was expected that the men would return to work within a few days, but a controversy developed over a clause in the agreement between the company and the men, which prevented the former workers from returning to work and the strike instituted last May by the union workers will continue indefinitely. The controversy over the clause occurred at a conference of representatives of the various labor unions and officials of the corporation in the office of the corporation in Hudson Falls. Union representatives refusing to sign the agreement claimed that certain words in the membership clause have been changed causing what union men say is an entirely different viewpoint. The clause refused by the men states that workers "shall be permitted" to maintain their membership in labor organizations, the union men contend.

The original agreement as approved by President Calder, union representatives and the board of directors of the corporation states that the workers "shall maintain" their membership in the various organizations.

The previously accepted section would have permitted union employes to refuse to work with non-union employes, and the signing of the amended agreement would have placed employes in a position where they could not refuse to work with non-union men.

New Embossed Cover Stocks

The Miami Valley Coated Paper Company, Franklin, Ohio, announced a new embossed cover stock in three finishes and eight strong colors. This stock is known as Duralite Duplex. The company claims it is unquestionably the toughest and sturdiest cover stock on the market.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, May 17, 1933.

Trading in the local paper market was active during the past week. Numerous inquiries are being received for future account. Sales forces of the leading paper organizations are more optimistic than for some time past. Prices of the various standard grades of paper are firmer.

Production of news print paper in North America during April amounted to 242,493 tons, a decrease of 18 per cent compared with April last year, according to the News Print Service Bureau. Stocks at the mills at the end of the month totalled 58,403 tons, compared with 73,498 tons on March 31.

The paper board market is holding up well, with box board output well maintained. Prices continue steady to firm. Business in the fine paper market is gradually improving. Coated paper quotations are firmer. The coarse paper market is expanding and an advance is anticipated on kraft paper shortly.

Mechanical Pulp

Steadiness prevails in the ground wood pulp market. Demand for both imported and domestic mechanical pulp is satisfactory for the time of year. Offerings are sufficient to take care of current requirements. Prices are generally holding to previously quoted levels, without difficulty.

Chemical Pulp

Demand for both imported and domestic chemical pulp was more persistent during the past week. The recently advanced prices on some of the grades are well maintained. Imported bleached sulphite is quoted at from $1.90 to $2.40, on dock, Atlantic ports. Domestic bleached sulphite is selling at from $1.75 to $3.75, f.o.b. pulp mill.

Old Rope and Bagging

The old rope market is exhibiting an upward trend. Demand for both domestic and foreign old manila rope is seasonal. Small mixed rope is moving in fairly good volume. Prices are steady to firm. The bagging market is stronger. Gunny, scrap and roofing bagging are in normal request.

Rags

Conditions in the domestic rag market are improving. Due to the rise in staple, cotton rags are firmer. No. 1 white shirt cuttings are displaying strength. Roofing grades are much firmer, especially the imported grades. Dark cottons are steady. The imported rag market is irregular.

Waste Paper

Board mill demand for the lower grades of paper stock is improving. No. 1 mixed paper has advanced from $.25 to $.30 to from $.28 to $.33, f.o.b. New York. The higher grades of waste paper are steady, especially hard and soft white shavings. Book stock is marking time.

Twine

Business in the local twine market is showing signs of improvement. Supplies are moving in fairly heavy volume. While competition is keen, reports of shading are infrequent. Due to the rise in the price of cotton, quotations on cotton twine are firmer than for some time past.

Against Labor Organizations

RUMFORD, Me., May 12, 1933—The Oxford Paper Company has posted the following notice in its mill:

"The Oxford Paper company is aware of the fact that efforts are being continued to induce the employees to become members of the International Brotherhood of Pulp, Sulphite and Papermill Workers and the International Brotherhood of Paper workers. In view of this the company wishes to confirm certain statements made by its local managers on April 19 and 20 to a number of its employees by hereby informing all employees that it will not in any way or any circumstances (1) recognize any such affiliation as representative of Oxford employees or (2) enter into any associations with such organizations as representing Oxford employees."

New Gilbert Booklet Out

The story of the Gilbert mills, their organization and efficient equipment, is told in an artistic and brilliantly illustrated institutional book just issued by the Gilbert Paper Company, of Menasha, Wis.

This interesting booklet will be part of the company's loose leaf leather bound combination set containing sample books of all of the nationally distributed Gilbert grades.

The Gilbert Paper Company has also issued a mailing piece advertising Resource Bond, the All Purpose Bond, which is said to be the first grade made in America containing a mixture of bleached sulphite and rag fibers.

Grimes & Friedman Dissolved

The firm of Grimes & Friedman, dealers in waste paper stock, Denver, Col., has been dissolved. S. Friedman and his son Hyman have purchased all the properties and good will of the former firm and have succeeded to all its business and plants. Hereafter the business will be conducted under the name of S. Friedman & Son, Inc., at 2162 Market street.

Manufacturers Boston Office Closed

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., May 15, 1933.—The Manufacturers' Paper Company has closed its Boston office. K. B. Fullerton, Jr., who has represented the company in the New England territory for many years has not yet announced his plans for the future.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, May 17, 1933,

BLANC FIXE.—Demand for blanc fixe is fairly persistent. The contract movement is well up to average. The pulp is quoted at from $42.50 to $45.00 per ton, in bulk; while the powder is selling at from 3 to 3½ cents per pound, in barrels, at works.

BLEACHING POWDER.—The position of the bleaching powder market is practically unchanged. Prices are generally holding to formerly quoted levels. Bleaching powder is quoted at from $1.75 to $2.00 per 100 pounds, in drums, at works.

CASEIN.—The casein market again advanced. Domestic casein is quoted at 9 to 9½ cents and finely ground at 10 to 11 cents per pound. Argentine standard ground is selling at 9⅞ cents and finely ground at 10½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Conditions in the caustic soda market are fairly satisfactory. The contract movement is normal. Solid caustic soda is quoted at from $2.55 to $3.00; while the flake and ground are selling at from $2.95 to $3.00 per 100 pounds, in large drums, at works.

CHINA CLAY.—The china clay market is inclined to fluctuate, due to the foreign exchange situation. Imported china clay is quoted at from $12 to $17 per ton, ship side; while domestic paper making clay is selling at from $5 to $12 per ton, at mine.

CHLORINE.—Trading in the chlorine market is moderately active. The contract movement is fairly heavy. Prices remain steady and unchanged. Chlorine is quoted at $1.75 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is rather quiet. The grades of gum rosin used in the paper mills are quoted at from $4.50 to $4.85 per 280 pounds, in barrels, at works; while wood rosin is selling at $3.30 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Some improvement was noticed in the salt cake market. Salt cake is quoted at from $12.50 to $13.00; chrome salt cake at from $1.50 to $12.50 per ton, at works; while imported salt cake is selling at from $12.50 to $13.00 per ton, on dock.

SODA ASH.—The soda ash market continues to display strength. Shipments against contract are moving in good volume. Quotations on soda ash, in car lots, at works, per 100 pounds, are still as follows: in bulk, $1.05; in bags, $1.30; and in barrels, $1.43.

STARCH.—Recent improvements in the starch market are well maintained. Paper mill demand is satisfactory for the time of year. Special paper making starch is still quoted at $2.64 per 100 pounds, in bags; and $2.91 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Business in the sulphate of alumina market is improving. Prices are holding to schedule. Commercial grades are quoted at from $1.25 to $1.46; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market continues steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Supplies of talc are going forward to the paper mills in a routine manner. Prices are holding to schedule. Domestic talc is quoted at from $16 to $18 per ton, in bulk, at eastern mines; while foreign talc is selling at from $18 to $22 per ton, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@	38.00
Bonds	4.75	@	53.25
Index	6.00	@	12.00
Writings—			
Extra Superfine	6.50	@	15.00
Superfine	6.25	@	14.75
Tub sized	4.50	@	7.00
Engine sized	4.00	@	5.00
Book, Cased—			
S. & S. C.	4.25	@	5.00
M. F.	3.75	@	4.25
Coated and Enamel	5.00	@	9.00
Lithograph	5.00	@	9.00
Tissues—Per Ream—			
White No. 1	.50	@	.70
White No. 2	.45	@	.60
Anti-Tarnish M. G. only	.65	@	.70
Colored	.70	@	.90
Kraft	.65	@	.70
Manila	.55	@	.60
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.37½	@	—
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs., No. 1	.09¼	@	—
No. 2	.11¼	@	—
Bleached, basis 20 lbs.	.11¼	@	—

(Delivered New York)

News, per ton—			
Roll, contract	40.00	@	—
Rolls, spot	40.00	@	—
Sheets	45.00	@	—
Side Runs	25.00	@	—
Kraft—			
No. 1 Domestic	4.50	@	4.75
No. 2 Domestic	2.75	@	3.00
Southern	2.62½	@	3.00
Imported	2.75	@	3.50
Boards—per ton—			
News	32.50	@	35.00
Straw	29.50	@	31.50
Chip	30.00	@	32.50
Binders' Boards	62.00	@	70.00
Kraft Liner	40.00	@	45.00
Standard 85 Test			
Jute Liner	27.75	@	30.00
Sgl. Mla. Ll. Chip	37.50	@	40.00

(F. o. b. Mill)

Wood Pulp Boards	70.00	@	80.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	19.00	@	21.00
Dry	19.00	@	21.00

(F. o. b. Mill)

No. 1 Domestic and Canadian	14.00	@	22.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	1.90	@	2.40
Easy Bleaching	1.80	@	1.85
No. 1 strong unbleached	1.50	@	1.65
Mitscherlich unbleached	1.60	@	1.75
No. 2 strong unbleached	1.35	@	1.40
No. 1 Kraft	1.25	@	1.40
No. 2 Kraft	1.10	@	1.15
Sulphate—			
Bleached	1.85	@	2.15

(F. o. b. Pulp Mill)

Sulphite (Domestic and Canadian)—			
Bleached	1.75	@	3.75
Easy Bleaching	1.60	@	1.75
News	1.40	@	1.65
Mitscherlich unbleached	2.00	@	2.25
Kraft (Domestic)	1.25	@	2.75

(Delivered Paper Mills)

Soda Bleached	2.00	@	—

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	3.80	@	4.25
Silesias No. 1	3.00	@	3.25
New Unbleached	5.25	@	5.75
New Soft Blacks	2.75	@	3.00
Blue Overall	2.50	@	3.00
Fancy	1.25	@	1.50
Washables	1.00	@	1.25
Mixed Khaki Cuttings	2.25	@	2.50
Pink Corset Cuttings	2.75	@	3.25
O. D. Khaki Cuttings	2.50	@	3.00
Men's Corduroy	1.00	@	1.25
New Mixed Blacks	2.25	@	2.50

Old Rags

White, No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.00	@	2.25
White, No. 2—			
Repacked	1.75	@	2.00
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.50	@	1.75
Miscellaneous	1.00	@	1.25
Black Stockings	2.00	@	2.25
Roofing Rags—			
No. 1	.53	@	.58
No. 2	.48	@	.53
No. 3	.43	@	.48
No. 4	.38	@	.43
No. 5A	.33	@	.38

Foreign Rags

New Rags

New Dark Cuttings	1.50	@	1.60
New Mixed Cuttings	1.60	@	1.70
New Light Silesias	3.25	@	3.50
Light Flannelettes	3.00	@	3.25
Unbleached Cuttings	5.00	@	5.25
New White Cuttings	4.50	@	4.75
New Light Oxfords	3.25	@	3.50
New Light Prints	2.00	@	2.25

Old Rags

No. 1 White Linens	5.75	@	6.00
No. 2 White Linens	5.00	@	5.25
No. 3 White Linens	4.00	@	4.25
No. 4 White Linens	2.00	@	2.25
No. 1 White Cotton	3.75	@	4.00
No. 2 White Cotton	3.00	@	3.25
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.50	@	1.60
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	1.50	@	1.80
French Blue Linens	2.10	@	2.25
German Blue Linens	1.85	@	2.00
German Blue Cottons	1.35	@	1.50
Checks and Blues	1.30	@	1.40
Lindsay Garments	.90	@	1.00
Dark Cottons	.75	@	.80
Old Shopperies	.65	@	.70
New Shopperies	.65	@	.70
French Blues	1.40	@	1.50

Old Rope and Bagging

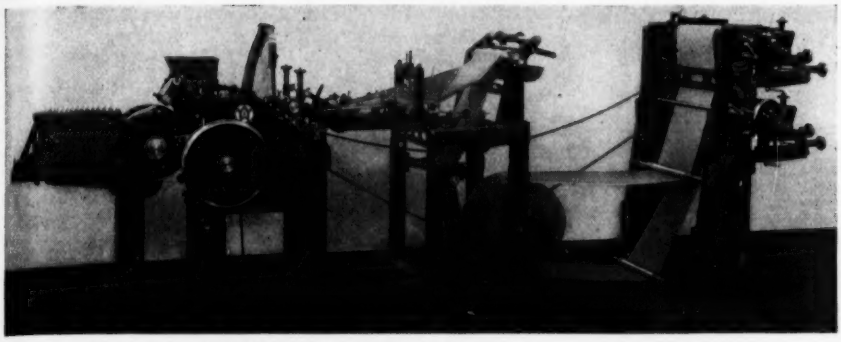
(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	.90	@	1.00
Domestic	1.00	@	1.10
Wool Tares, light	.85	@	.90
Wool Tares, heavy	.85	@	.90
Bright Bagging	.80	@	.85
Small Mixed Rope	.60	@	.65
Manila Rope—			
Foreign	1.60	@	1.70
Domestic	1.60	@	1.75
New Burlap Cut	1.25	@	1.50
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.00	@	2.10
Ordinary Hard White No. 1	1.70	@	1.80
Hard White No. 2	1.50	@	1.60
Soft White No. 1	1.45	@	1.55
Flat Stock—			
Stitchless	.65	@	.70
Overissue Mag.	.65	@	.70
Solid Flat Book	.55	@	.65
Crumpled No. 1	.45	@	.50
Solid Book Ledger	1.50	@	1.75
Ledger Stock	.45	@	.55
New B. B. Chips	.20	@	.25
Manilas—			
New Env. Cut	1.35	@	1.45
New Cuttings	1.00	@	1.05
Extra No. 1 old	.80	@	.90
Print	.35	@	.40
Bogus Wrapper	.30	@	.35
Container	.25	@	.30
Old Kraft Machine—			
Compressed bales	.65	@	.75
News—			
No. 1 White News	1.00	@	1.05
Strictly Overissue	.50	@	.55
Strictly Folded	.43	@	.48
No. 1 Mixed Paper	.28	@	.33



H. H. HEINRICH, INC. 200 Varick St., New York 122 S. Michigan Ave., Chicago

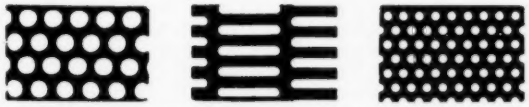
Pacific Coast Representative, H. W. BRINTNALL CO., San Francisco, Los Angeles, Seattle

Let this machine earn money for YOU

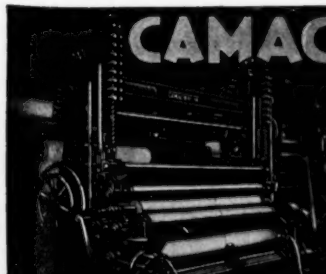
This new high-speed MATADOR Bag Machine is made in various sizes for bags up to 30" tube length and 19¾" width. It is a marvelous machine, this Matador 700, and a wonderful profit-earner. Write for printed matter about it, also about our high-speed multi-color Aniline Printing Presses.

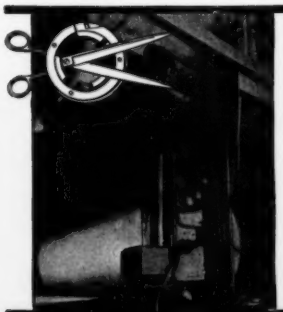
Dietz Towel Interfolding Machines
also
TOILET PAPER MACHINES
For making Toilet and Paper Towel Rolls
(With or without perforations)
AUTOMATIC TUBE MACHINES
For Making Wire-Stitched Toilet Tubes
Sanitary Crepe Towel Machines, Roll Tighteners, Slitting and Rewinding Machines, Drop Roll Slitting Machines, Photo Mount Beveling Machines, Rotary Card Cutting Machines, etc.
Correspondence solicited
DIETZ MACHINE WORKS
126-128 W. Fontaine Street
Cor. Waterloo St. (between Front & Second Sts.)
and below Diamond St.
Phila., Penna., U. S. A.

PMC
SUPERIOR ROSIN SIZE SATIN WHITE INDUSTRIAL CHEMICALS
Quantity production, careful control of raw materials, and specialization in the manufacture of chemicals for paper-making insure reliability and uniformity in P. M. C. products for the paper manufacturer.
PAPER MAKERS CHEMICAL CORPORATION
KALAMAZOO, MICHIGAN
PLANTS IN ALL LARGE PAPER MAKING AREAS

PULP AND PAPER MILL SCREENS

EVERY TYPE OF PERFORATED METAL
STAINLESS STEEL, MONEL, CHEMICAL RESISTING ALLOYS OR ANY METAL PERFORATED AS DESIRED
EXCELLENCE OF PRODUCT LOW PRICES
THE HARRINGTON & KING PERFORATING CO.
5652 FILLMORE ST., CHICAGO NEW YORK, 114 LIBERTY ST.

CASEIN
CASEIN-CO A BORDEN PRODUCT BRAND
Uniform Quality
Dependable Service
THE CASEIN MFG. COMPANY OF AMERICA, Inc.
205 E. 42nd St. New York, N. Y.
Oldest and Largest Producers of Casein in America

CAMACHINE 14

PAPER MILL MODEL
USED AS WINDER OR REWINDER
BUILT IN WIDTHS OF 55 TO 92"
SPEEDS UP TO 1400 F.P.M.
MAXIMUM REWIND DIAMETER 38"
NEW FEATURE FOR REVERSING WEB IN WINDING
PATENTED METHOD WINDS ROLLS WIRE SIDE OUT IF REQUIRED
CAMERON MACHINE COMPANY 61 POPLAR ST. BROOKLYN N.Y.


BETTER your product—lower your manufacturing costs—with Langston Slitters and Rewinders. Every roll square-edged, tightly wound, dust-free. Types for every need. Ask for catalog.
Samuel M. Langston Co., Camden, N. J
LANGSTON SLITTERS

Twines
(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finisaed Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.15½	@	.16½
No. 2	.11¼	@	.12¼
Tube Rope—			
4-ply and larger	.08¼	@	.10¼
Fine Jute Rope—			
4-ply	.12¼	@	.12¼
3-ply	.13¼	@	.13¼
2-ply	.14¼	@	.14¼
Paper Makers Twine			
Balls	.09¼	@	.11¼
Box Twine, 2-3 ply	.11¼	@	.12¼
Jute Rope	.09	@	.10
White Hemp	.12¼	@	.15¼
Java Sisal—			
No. 1 Basis	.10	@	—
No. 2 Basis	.09	@	—
New Zealand Sisal	.10	@	—
Sisal Lath Yarn—			
No. 1	.12	@	.14
No. 2	.10	@	.12
Manila Twine	.23	@	.28

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.04	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.07	@	.18
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¼	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	3.50	@	4.50
Southern Kraft	2.62½	@	—
No. 2 Kraft	2.62½	@	—
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03½
Manila Tissue	.07	@	.07½
White Tissue	.07¼	@	.07½
(Delivered Central Territory)			
News, per ton—			
Rolls, contract	45.00	@	—
Sheets	50.00	@	—
Boards, per ton—			
Plain Chip	27.50	@	—
Solid News	30.00	@	—
Manila Lined Chip	37.50	@	—
Patent coated	47.50	@	—
Container Lined—			
85 Test	50.00	@	55 00
100 Test	55.00	@	60.00

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	1.50	@	1.55
No. 1 Hard White	1.40	@	1.45
No. 1 Soft White	1.00	@	1.10
Ledger & Writings	.55	@	.60
Solid Books	.45	@	.50
Blanks	1.00	@	1.05
Krafts	.70	@	.80
New Kraft Cuts	1.15	@	1.25
Manila Env. Cuts	1.25	@	1.30
Ex. No 1 Manila	.90	@	1.00
Print Manila	.30	@	.40
Overissue News	.45	@	.50
Old Newspapers—			
No. 1	.45	@	.50
Mixed Papers—			
No. 1	.25	@	.30
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.04	@	.40
Ledgers	.06	@	.40
Writings—			
Superfine	.10	@	.18
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Fine No. 3	.05½	@	.18
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.06	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.06	@	.09
Manila Sul., No. 1	.03	@	.05
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03¼	@	.04¼
Southern Kraft No. 1	—	@	.03¾
Southern Kraft No. 2	—	@	.02¾
Common Bogus	.03	@	.04
(Delivered Philadelphia)			
News Print Rolls	46.00	@	—
Straw Board	32.00	@	—
News Board	30.00	@	—
Chip Board	30.00	@	—
Wood Pulp Board	70.00	@	80.00
Binder Boards—			
No. 1, per ton	73.00	@	75.00
No. 2, per ton	62.00	@	65.00
Carload lots	60.00	@	65.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1 50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.03½	@	.04
New White, No. 2.	.02½	@	.04
Light Silesias	.02½	@	.03
Silesias, No. 1	.03	@	.03½
Black Silesias, soft.	.02½	@	.03
New Unbleached	.05	@	.05½
Washable, No. 1	.01	@	.01½
Blue Overall	.03	@	.03½
Cottons—According to grades—			
Washable, No. 2	.01	@	.02
New Blue	.01	@	.02
Fancy	.01½	@	—
New Black Soft	.02	@	.03
New Light Seconds	.01	@	.02
New Dark Seconds	1.50	@	1.75
Khaki Cuttings—			
No. 1 O.D.	.03	@	.03½
No. 2 Mixed	.02½	@	.03
Corduroy	.02	@	.02½
New Canvas	.03½	@	.04
New Black Mixed	.02½	@	.03

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.00
Miscellaneous	1.75	@	2.00
M. G.	3.00	@	3.50
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	2.00	@	3.50
Roofing Stock—			
Foreign No. 1	.50	@	.75
Repacked	.70	@	.80

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.50
Domestic	1.50	@	—
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	1.60	@	1.70
No. 2 Hard White	1.50	@	1.60
No. 1 Soft White	1.40	@	1.45
No. 2 Soft White	1.10	@	1.15
No. 1 Mixed	.50	@	.60
No. 2 Mixed	.40	@	.50
Solid Ledger Stock	1.20	@	1.25
Writing Paper	.65	@	.70
No. 1 Books, heavy	.55	@	.60
No. 2 Books, light	.40	@	.45
No. 1 New Manila	1.10	@	1.15
No. 1 Old Manila	.60	@	.65
Print Manila	.40	@	.45
Container Manila	.40	@	.50
Old Kraft	.80	@	.85
Common Paper	.25	@	.30
No. 1 Mixed Paper	.25	@	.30
Straw Board, Chip	.25	@	.30
Binders Board Chip	.25	@	.30
Corrugated Board	.35	@	.40
Overissue News	.50	@	.65
Old Newspaper	.40	@	.50

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.05¾	@	.11½
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06¾
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	—	@	.04¾
No. 2 Kraft	.02½	@	—
(F. o. b. Boston)			
Southern Kraft	.02½	@	—
(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)			
Common Bogus	.02	@	.02¾
(Delivered New England points)			
News Print, rolls	44.50	@	—
Straw Board, rolls	.009	—	@35.00
Straw Board in Sheets, basis 35s to 70s		—	@40.00
Filled News Board	30.00	@	—
Chip Board	27.50	@	—
Chip Board (Creasing)	27.50	@	30.00
Single Manila Lined Chip		—	@37.50
Single White, Patent Coated News Board—			
Bender	45.00	@	55.00
Wood Pulp Board	70.00	@	75.00
Binder Boards	62.00	@	75.00

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Soft White	1.25	@	1.40
No. 1 Old Manila	.50	@	.60
No. 1 Mixed	.60	@	.70
No. 2 Mixed	.40	@	.50
Solid Ledger Books	1.20	@	1.40
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.60	@	.70
No. 1 Books, heavy	.55	@	.65
No. 1 Books, light	—	@	.30
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.25	@	1.30
No. 1 Old Manila	.50	@	.60
White Blank News	.85	@	.90
No. 1 Kraft	.80	@	.85
Manila	.80	@	.90
No. 1 Mixed Papers	.20	@	.22½
Print Manila	.30	@	.40
Overissue News	.35	@	.45
Old Newspapers	.32½	@	.37½
Box Board, Chip	.17½	@	.20
Corrugated Boxes	.25	@	.30
Screening Wrappers	.25	@	.32½

Bagging
(F. o. b. Boston)

Manila Rope—			
Foreign	1.60	@	—
Domestic	1.75	@	—
Transmission Rope	1.20	@	—
Mixed Strings	.25	@	.30
Jute Rope	—	@	.75
Jute Carpet Threads	.25	@	.30
Gunny No. 1—			
Foreign	1.20	@	—
Domestic	.70	@	.80
Bleachery Burlap	1.75	@	2.00
Scrap Burlap	.60	@	.70
No. 1 Scrap Burlap	.70	@	.75
Scrap Sisal	.80	@	1.00
Scrap Sisal for shredding	—	@	.90
Wool Tares, heavy	.75	@	.85
New Burlap Cutting	.75	@	.90
Australian Wool Pouches	1.75	@	2.00
Heavy Baling Bagging	.90	@	1.25
Paper Mill Bagging	.60	@	.70
Bagging No. 2	.20	@	.25
No. 1 Burlap	1.75	@	2.00

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	—	@	.01½
New White No. 1.	—	@	.03¼
New White No. 2.	.02¾	@	.03¼
Silesias No. 1	—	@	.02
New Black Silesias	.02½	@	.02¾
New Unbleached	—	@	.04½
Fancy	—	@	.02¼
Washable	—	@	.01¾
Cottons—According to grades—			
Blue Overalls	—	@	.03¾
New Black, soft	.04	@	.04½
Khaki Cuttings	.03	@	.03¼
O. D. Khaki	.03	@	.03¼
Corduroy	.01¾	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	.04	@	.04¼

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	1.50	@	1.75
White No. 2—			
Repacked	.01½	@	.01¾
Miscellaneous	.01½	@	.01¾
Twos and Blues	.90	@	1.00
Thirds and Blues—			
Repacked	.75	@	.85
Miscellaneous	.70	@	.75
Black Stockings	2.00	@	2.25
Roofing Stock—			
No. 1	.40	@	.45
No. 2	.35	@	.40
No. 3	.25	@	.30

Foreign Rags
(F. o. b. Boston)

Dark Cottons	.50	@	.60
New No. 1 White Shirt Cuttings	3.75	@	4.00
Dutch Blues	1.25	@	1.50
New Checks & Blues	2.25	@	2.50
Old Fustians	—	@	.75
Old Linsey Garments	.55	@	.65

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.09¾	@	—
No. 2 Sulphite	.08	@	—
No. 1 Colored	.10¼	@	—
No. 2 Colored	.08½	@	.10½
Ledgers (sulphite)			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.20	@	—
No. 3 M. F. (Carloads)	5.70	@	—
No. 4 M. F. (carloads)	4.75	@	—
No. 1 S. C. (carloads)	6.65	@	—
No. 3 S. C. (carloads)	6.20	@	—
No. 4 S. C. (carloads)	5.20	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.25	@	—
White Wrap	2.00	@	—
"B" Manila	4.75	@	—
No. 1 Manila	5.25	@	—
Fiber	5.25	@	—
Kraft, M. F.	5.75	@	—
Kraft No. 2	5.25	@	—
News, per ton—			
Rolls (contract)	45.50	@	—
Sheets	50.50	@	—

Pulp
(F. o. b. Mill)

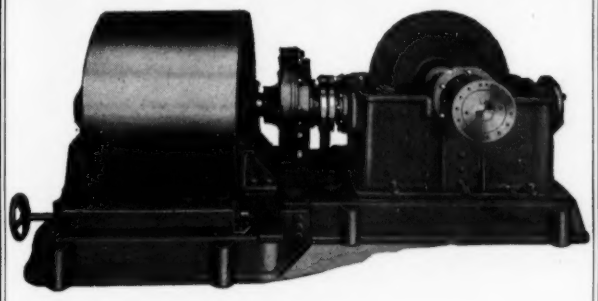
Ground Wood	18.00	@	20.00
Sulphite easy bleaching	40.00	@	—
Sulphite, news grade	38.00	@	—
Sulphite, bleached	45.00	@	50.00
Sulphate	50.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	1.80	@	—
Soft White	1.40	@	—
White Blk. News	1.25	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	—
Light and Crumpled Book Stock	.80	@	—
Ledgers and Writings	1.00	@	—
Manilas—			
New Manila Cut	1.25	@	—
Printed Manilas	.55	@	—
Fancy Shirt Cuttings	.02¾	@	.02½
Kraft	1.25	@	—
News and Scrap—			
Strictly Overissue	.50	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags
(Price to mills f. o. b. Toronto)

No. 1 White Shirt Cuttings	.04¼	@	.04¾



HYPOID GEAR DRIVE STANDS

During this period of transition enclosed Gear Drives are in the forefront.

The Montague design was developed to meet exacting conditions.

It has given entirely satisfactory results where installed.

The enclosed steel gears are heat treated and splash lubricated.

Anti-friction bearings throughout.

Magnetic or mechanical clutch as preferred.

Manual or electrically operated belt shifter.

Extra deep sub-base, ribbed for maximum rigidity.

Vibrationless and quiet in operation.

Will you consider us at your service?

Montague Machine Co.

Turners Falls, Mass.

PAPER TRADE JOURNAL
ESTABLISHED 1872
SIXTY-FIRST YEAR
THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD
Published Every Thursday by the
LOCKWOOD TRADE JOURNAL CO., Inc.
GEO. S. MACDONALD, President. J. BANNINGA, Sec.-Treas.
Published at 34 No. Crystal St., East Stroudsburg, Pa.
Executive and Editorial Offices: 15 West 47th Street, New York
Chicago Office: 123 West Madison St.

TABLE OF CONTENTS

Board Mill Acquisition Plan Progressing 11
Paper Demand Expands in Boston 12
Bartram Products Increase Exports 12
Premier Opposes Power Export 13
Mead Co. Removes to Chillicothe 13
Paper Business Better in Ontario 14
Hinde & Dauch Had Good Quarter 14
Corinth Mill Adds Men 14
Paper Demand Gains in Chicago 15
United Container to Meet 15
Cooperative Spirit in Philadelphia 16
Regional Competition in Pulpwood 18
Norwegian Pulp Production Rises 23
New Method of Sulphite Digester Cooking 24
St. Regis Reduces Wages 25
Government Paper Bids 25
Delaware Valley TAPPI Meets 26
Construction News 27
New Paper Jobbing House for York 28
Fragrantized Paper 28
Obituary 29
New York Trade Jottings 30
Editorial 32
Import Paper Decisions 33
Union Bag Strike Settled 33
New Eaton-Dikeman Plant Starts 33
Technical Section
Pulp and Paper Industry Literature Review .. 35
Valley Iron Works Joins TAPPI 38
TAPPI Notes 38
Two-Stage Continuous Batch Beating and Automatic Beater Room Operation 39
A Permanent Supply of Pulping Woods in the Pacific Northwest 41
Moisture Content Measurements 43
A Brief Study of Some Old Papers 45
R. C. Friffin Appointed 46
Imports of Paper and Paper Stock 47
New York Market Review 49
Miscellaneous Markets 50
Market Quotations 50

THE PAPER TRADE JOURNAL is indexed in Industrial Arts Index

Want and For Sale Advertisements, 54-55

OPACITY - RAYOX

(Pure TITANIUM Dioxide)

REFRACTIVE INDEX—2.52

The whitest and most opaque of any white pigment that has as yet been discovered.

It is being used both as a filler and in coating.

Our laboratory will be glad to assist you in formulating methods of application to insure maximum opacity in your paper.

"McNAMEE" CLAY

Air washed, Pulverized, or Crude.

We manufacture all grades suitable for both filling and coating.

R. T. VANDERBILT CO.

230 Park Avenue
New York